Revision 1d

2008 Catalog

MoTeC Systems USA

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Mooresville, NC 28117

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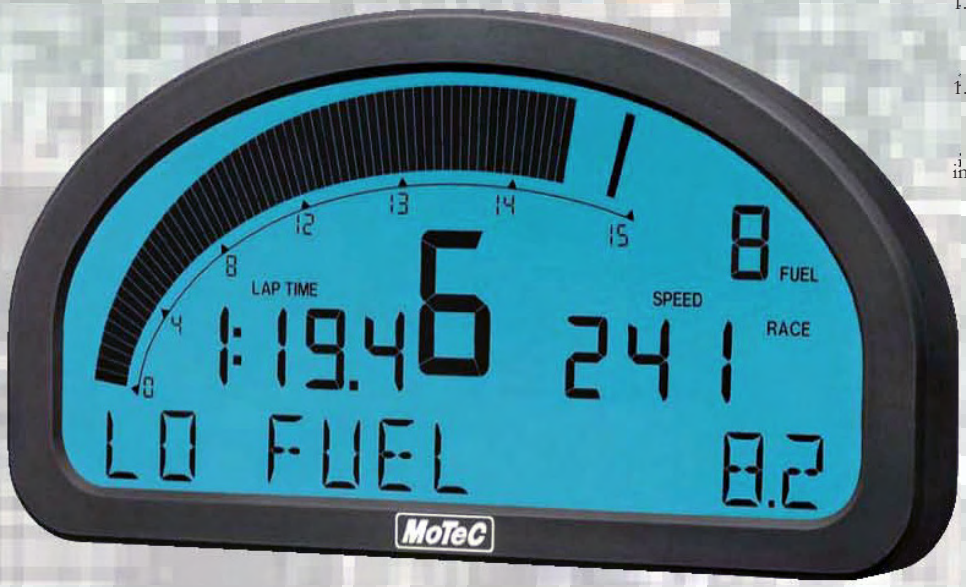
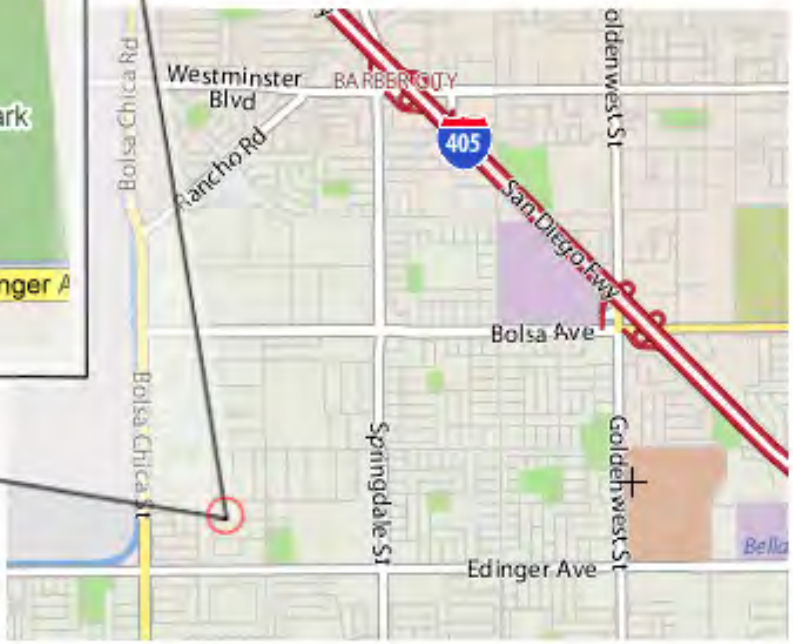


www.motec.com

MoTeC Systems West

Optimal performance begins here. Stop by and see us in Huntington Beach, California. We've been providing the best in engine-management systems and support since 1985.

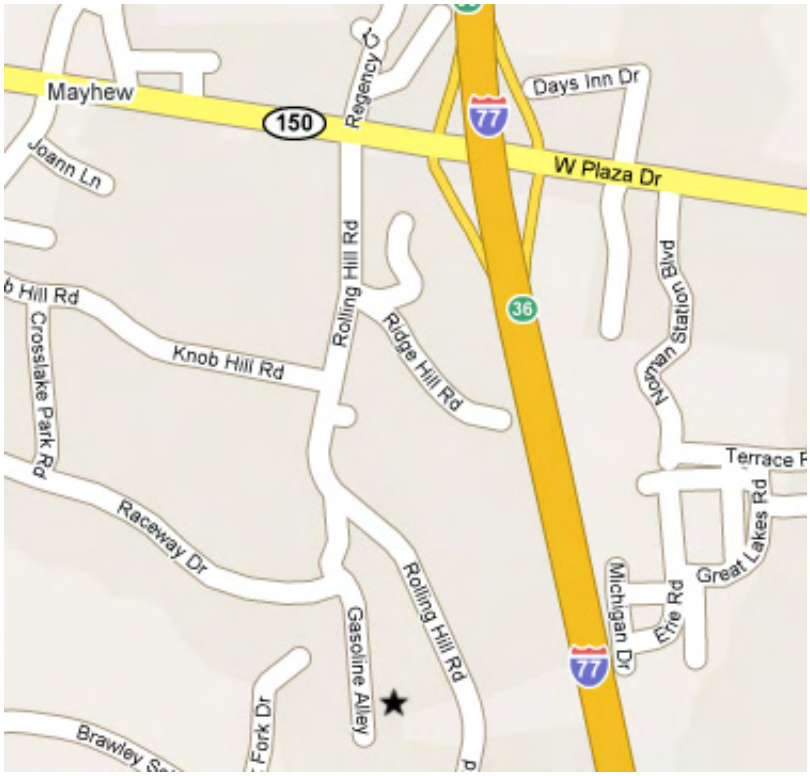
5355 Industrial Drive
Huntington Beach, CA 92649
(714) 895-7001



Business Hours:
Monday - Friday
8:30am - 5:00pm

MoTeC Systems East

169-5 Gasoline Alley
Mooresville, Iredell, NC 28117
(704) 799-3800



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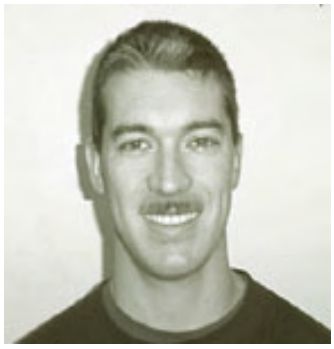
MoTeC Support



Simon Wagner

Colin Mason

Christopher Brown

Nathan Tasukon

Professional Lambda Meter

Specifications:

- Weighs135 gms
- Robust aluminum enclosure
- Operating range 0.70 and 32.0 lambda (for gasoline/ petrol this equals air/fuel ratio range of 10.3:1 to 470:1)
- Display lambda, air/fuel ratio, or oxygen percentage for any sensor-compatible fuel
- Define display resolution (in decimal points), update rate, filtering, backlight intensity
- Easy Air calibration using PLM Software (no twisting of screws or watching LED's required)

Kits come with Sensor, Harness, Software, O2 Bung, Comm Cable and Users Manual

Professional lambda meter with Bosch LSU lambda sensor or NTK Pro Uego lambda sensor.

P/N: **M PLM**

CALL FOR CURRENT PRICES

The MoTeC Professional Lambda Meter (PLM) determines exhaust gas mixture strength over a wide range of conditions with a fast response time. Quick and easy to use, it allows a calibration engineer all the power and configurability required for OE emissions development and certification work.

The MoTeC PLM provides a differential analog-voltage output that connects to an analog meter or measurement instrument such as data logger or chart recorder. Define output as linear or non-linear in relation to the measured units. The PLM also supports 1mbit CAN and RS232 data links to devices such as the MoTeC dash/logger for transmission of sensor and diagnostic data. Comprehensive diagnostic, status channels are provided for.

The PLM can be used as Lambda input for an ECU!. Instead of purchasing the Lambda Upgrade on M4/M48 - the PLM's definable output voltage can be used as the input for Lambda on these ECU's. This gives you the use of a more state of the art sensor with a digital display which you can place on your dashboard for viewing even if the ECU is offline. Of course you can then use this lambda meter on any other car you wish.

Professional Lambda Meter Accessories

Cigar Lighter Adapter

Allows you to power the PLM from an auto cigar lighter - great for in-car tuning

P/N: **M PLM CIG**

$46.62

PLM Suction Cup for P/N M PLM MOUNT. Mounts to windshield.

P/N: **M PLM SUCT CUP**

$21.48

PLM Universal Mounting Kit

P/N: **M PLM MOUNT**

$36.25

18mm X 1.5mm threaded stainless bung, with copper washer.

P/N: **TR-18 PLUG**

$14.00

18mm SS Ring for LSU Sensor.

P/N: **TR-18-13**

$16.25

PLM Extension Cable

Connects between PLM and Serial Port on PC.

Adds 20 feet of length between PLM and existing harness connector

Used to lengthen any PLM Harness regardless of sensor type. Rugged design is impervious to oil - excellent for dyno rooms and boats.

P/N: **M PLM EXT**

$110.00

Items Not shown:

Oxy Sensor Ring 304L Stainless.

P/N: **TR-18 SS**

$12.60

20 foot extension harness to connect PLM to sensor

P/N: **M PLM HARN LONG**

$239.00

MoTeC Steering Wheels

Made from 6061-T6 aluminum the MDD-SW housing is rugged enough to handle any motorsport use.

It communicates with the MoTeC ADL or M800 ECU via CAN.

The MDD-SW controls 12 LED outputs, and handles 12 switch inputs.

The Mini-Display-Dash currently fits the following models:

Momo model 12

P/N: **M MDD 12-1**

Momo model 27

P/N: **M MDD 27-1**

Momo model 29

P/N: **M MDD 29-1**

CALL FOR CURRENT PRICES

For options list and ordering please consult your MoTeC Representative

Laser Etched Graphics

You can order your MDD-SW completely customized with your team's logo or driver's signature on it. Our laser can also label buttons and controls so the driver never forgets what button to push.

Configurable LCD Read Out

The LCD display features adjustable brightness and contrast controls. In lap mode, it features a Gain/Loss bar graphic and switch to an "ADL display mode" to mimic the ADL dash display.

Pit Lane Speed Control

The Pit lane speed button latches on with one push. The top LED's switch from green to red, counting down your speed. When you're leaving the pits, push it once more to turn it off.

4-way Switches

You can choose a 4 way multiple switch to replace any of the buttons. This provides a variable voltage input device.

L.E.D. Lights

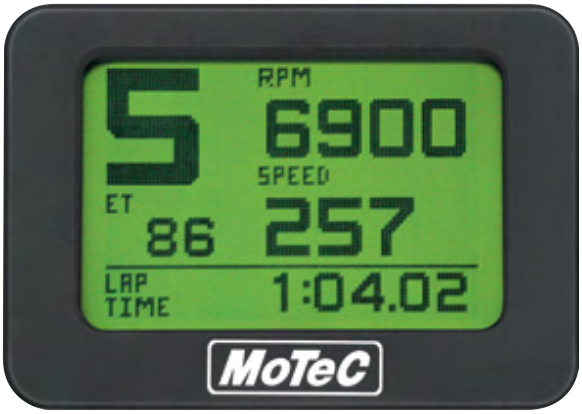
The MDD-SW features bi-color, high intensity LED's used for shift lights, warning lights, and pit lane speed.

Additional Buttons

The base MDD-SW comes with 4 buttons. You can add up 12 buttons, available in a multiple of colors and labels, to suit driver's preference.

Additional Models Coming Soon...

MoTeC Mini Display Dash



The display is a DOT Matrix backlit graphics LCD which allows the MDD to support a number of different display layouts to suit various applications. The MDD is small enough to be mounted on the steering wheel or it may be mounted in a more traditional location using 2 sided tape or Velcro. The MDD and its outputs are fully controllable when the MDD is used in conjunction with the ADL. When used with an ECU, the MDD features predefined display screens. A Switched input to the MDD allows the user to toggle through the different display screens on the MDD.

- Weighs120 gms (1/4 pound)
- Robust aluminum enclosure
- W X L X H = 3.38 X 2.34 X .86 inches
- Max Current Requirement 150mA @14volts
- For use with ADL Dash Logger or with a MoTeC ECU
- Receives data via serial or CAN bus

Mini Dash Display

P/N: **M MDD-1**

$1,735.00

Option - Integrated Switch Assembly - add $200.00

Expansion Boxes

E888 and E816 add additional I/O to your system. They talk to the Dash over the CAN bus so only 2 wires must be routed to the dash from either the E888 or E816. Each device features its own 0v and 5v references to monitor its own sensor inputs.

E888 contains:

- 8 Thermocouple inputs
- 8 Analog Voltage inputs
- 4 Digital Inputs
- 2 Switched Inputs
- 2 Cold Junction Compensation Inputs
- 8 PWM Outputs

P/N: **M E888**

$1,301.00

E816 Contains:

- 16 Analog Voltage Inputs
- 4 Digital Inputs
- 2 Switch Inputs
- 2 Thermistor Inputs
- 8 PWM Outputs

P/N: **M E816**

$1,411.00

Driver Displays & Loggers

Sport Dash

A great looking programmable digital dash for any automotive application. Replace your analogue gauges or use this as an additional display. Monitor your engine's vital statistics, set warnings or alarms and display speed, revs, gears, Lambda etc. The striking black brushed finish is standard and the blue backlight and logging is optional.

Features:

- Configured by PC program
- Equipped with USB for communications
- 37-pin Autosport connection
- High temperature/high contrast display

Optional Additions:

- 8 Mb logging memory
- Wideband Lambda
- Pro Analysis

Sport Dash

P/N: **M SD**

non-logging	with 8Mb logging memory
$2,431.00	$4,003.00

Sport Dash with Back Light Option*

P/N: **M SD BL**

non-logging	with 8Mb logging memory
$2,839.00	$4,411.00

Advanced Dash Logger (ADL2)

Fast, flexible and more powerful than ever, the ADL2 supersedes MoTeC's original ADL. It carries foward the same sophisticated good looks of its predecessor on the outside, but boasts an inpressive package of new features on the inside, including:

- Increased memory capacity, up to 16MB
- USB for much faster download
- Improved CAN processor for more CAN templates
- Increased processing speed
- Higher resolution inputs
- 4 x larger code memory
- Greater processing capacity for demanding applications
- Greater expansion (2x E888)

MoTeC ADL2 Data Logger

P/N: **M ADL2**

$7,197.00

MoTeC ADL2 Data Logger with Back Light Option*

P/N: **M ADL2 BL**

$7,891.00

MoTeC ADL2 Non-Display Dash Logger

P/N: **M ADL2 BLIND**

$7,089.00

ACL (Advanced Central Logger)

The ACL performs data logging, data communications and sophisticated calculations, as well as acquiring sensor data via the VIM expander modules. It also collects data from other connected devices such as MoTeC ADL2, SDL or ECU.
The ACL has a very large logging capacity (1GB+) with fast download via an Ethernet connection. It provides all the advanced features of MoTeC 's ADL2 Dash Logger, including warning alarms, fuel prediction, engine logs, timers, tables, user conditions, telemetry and more.
A remote display device such as MoTeC's MDD, ADL2 and SDL can also be connected, as well as the SLM (Shift Light Module)

Advanced Central Logger w/Pro Analysis

P/N: **M ACL**

$7,890.00

ACL Upgrades

Add Telemetry

P/N: **M ACL TELE**

$1,388.00

Add Remote Logging**

P/N: **M ACL REM LOG**

$1,54000

VIM (Versitle Input Module)

The VIM is a compact and versatile input expander module with high resolution inputs.

Multiple VIMs may be connected to the ACL Central Logger via a two wire CAN connection, allowing for more than 200 sensor inputs. The distributed nature of the VIMs wired onto the CAN bus allows them to be located close to the connected sensors, minimizing wiring complexity and weight.

It has 24 Analog inputs of various types including eight differential inputs with programmable gain which are suitable for strain gauges and isolated thermocouples.

Versitile Input Module

P/N: **M VIM**

$3,205.00

*Must be specified at the time of purchase

**Requires Telemetry Enabled

Driver Display & Logger Options/Upgrades

Sport Dash Upgrades

Add 8MB Logging Memory

P/N: **M SD 8MB LOG**

$1,572.00

Add Single Wideband Lambda

P/N: **M SD LAMBDA**

$380.00

Add Pro Analysis *(Requires logging to be enabled)*

P/N: **M SD PRO ANALY**

$1,008.00

ADL2 Upgrades

Add an additional 8MB of logging memory for a total of 16MB

P/N: **M ADL2 16MB LOG**

$412.00

Add additional I/O for a total of 50 I/O

P/N: **M ADL2 50 I/O**

$1,193.00

Add 2 additional Wideband Lambda Inputs

P/N: **M ADL2 LAM**

$564.00

Add Pro Analysis

P/N: **M ADL2 PRO**

$1,387.00

Add Remote Logging

P/N: **M ADL2 REM LOG**

$1,540.00

Add Telemetry

P/N: **M ADL2 TELE**

$1,388.00

SO WHICH SYSTEM IS RIGHT FOR

FEATURE	SPORT DASH	SPORT DASH WITH LOGGING	ADL 2
Display	Integrated	Integrated	Integrated
Display Backlight	Optional	Optional	Optional
Display Pages	1	1	3
Inputs (Analog/Digital)	12/6	12/6	28/12*
Input Expansion (Analog/Digital)	X	X	32/8 using 2 x E888/E816
Input Resolution	12bit	12bit	12bit
Lambda Inputs (Wideband)	1(optional)	1(optional)	2 (optional)
Outputs	4	4	8*
Output Expansion	X	X	E888/E816
Logging memory size	(no logging)	8Mbyte	16Mbyte
Log Unload Type	-	USB	USB
Log Unload Speed	-	2 sec/Mb	2 sec/Mb
Max Logging Rate (samples/sec)	-	200	1000
Pro Analysis	-	Optional	Optional
Analysis Software	-	Interpreter or i2	Interpreter or i2
Advanced Configuration**	X	X	Yes
Communications	CAN/RS232	CAN/RS232	CAN/RS232
Telemetry Output	X	X	Optional
Connector Type	Autosport 37 pin	Autosport 37 pin	Autosport 79 pin
Built-in Sensors	Vertical/Lateral Gforce	Vertical/Lateral Gforce	none
Case Material	Aluminum Black	Aluminum Black	Aluminum Matt Black

* Standard: 14 Analog/10 Digital/4 Outputs Standard, Optional: 28 Analog/12 Digital/8 Outputs

** Advanced Configuration includes: Increased configurability of many items including Communications, Alarms, Display Setup and additional functionality including: User Tables, Timers, Conditions, Maths, PID Control, Telemetry , Engine Log, Diagnostics Log .

MoTeC ECU's

P/N: **M880**
$5,962.00

Inputs
Ref and Sync Trigger
6 Temperature
8 Voltage
2 Lambda Sensors
4 Digital

Outputs
8 Fuel Injector Drivers
Up to 6 Ignition Drivers
8 Auxillary
Sensor Power Supply
-Separate Auxillary and Engine Power Supplies for sensors (0V, 5V, or 8V)

P/N: **M820**
$4,651.00

Inputs
Ref and Sync Trigger
6 Temperature
8 Voltage
2 Lambda Sensors
4 Digital

Outputs
8 Fuel Injector Drivers
Up to 6 Ignition Drivers
8 Auxillary
Sensor Power Supply
-Separate Auxillary and Engine Power Supplies for sensors (0V, 5V, or 8V)

P/N: **M600**
$3,632.00

Inputs
Ref and Sync Trigger
6 Temperature
8 Voltage
2 Lambda Sensors
4 Digital

Outputs
6 Fuel Injector Drivers
Up to 6 Ignition Drivers
8 Auxillary
Sensor Power Supply
-Separate Auxillary and Engine Power Supplies for sensors (0V, 5V, or 8V)

P/N: **M400**
$3,231.00

Inputs
Ref and Sync Trigger
6 Temperature
8 Voltage
1 Lambda Sensor
4 Digital

Outputs
4 Fuel Injector Drivers
Up to 4 Ignition Drivers
8 Auxillary
Sensor Power Supply
-Separate Auxillary and Engine Power Supplies for sensors (0V, 5V, or 8V)

MoTeC ECU's con'd

The ***M2R Ecu*** *i*s dedicated to 2 Rotor engines

P/N: **M M24**

$1,724.00

The ***MLS Ecu*** *i*s dedicated to LS and Lexus V8s

P/N: **M MLS**

$1,534.00

6 HRS FREE WIDEBAND LAMBDA and LOGGING
3 Temperature inputs
3 Voltage inputs
Narrowband Lambda sensor inputs
Hi/Low Injection control
2 Digital inputs
4 injector drivers
4 ignition drivers (3 ignition drivers are re-assigned Auxiliary outputs)
4 aux outputs
32bit Microprocessor
Field upgradeable
Fully Programmable

P/N: **M4 SEQ**

$2,103.00

TPS Input - varying voltage can use any sensor
MAP Input - varying voltage can use any sensor
Engine Temp - can be used for any temperature air, oil, head or water
Air Temp - can be used to measure air, oil, water or head temp
Aux Temp - EGT, Oil Temp or Trim Knob etc.
Aux Voltage - Baro Pressure, Oil Pressure etc.
2 X Digital/Switch Inputs - clutch sw, a/c request or wheel speed etc.
Cam/Crank Input Hall and Mag
1 Lambda Input
8 Injector Outputs (7 & 8 Can be used for Aux Functions on 6 or less cylinders)
2 Ignition Outputs - if 1 output is used (IEX, CDI-8 etc) other output is Auxiliary
3 Auxiliary Outputs (cooling fan, fuel pump, wastegate etc..)

P/N: **M48 SEQ**

$2,472.00

TPS Input - varying voltage can use any sensor
MAP Input - varying voltage can use any sensor
Engine Temp - can be used for any temperature air, oil, head or water
Air Temp - can be used to measure air, oil, water or head temp
Aux Temp - EGT, Oil Temp or Trim Knob etc.
Aux Voltage - Baro Pressure, Oil Pressure etc.
2 X Digital/Switch Inputs - clutch sw, a/c request or wheel speed etc.
Cam/Crank Input Hall and Mag
1 Lambda Input
8 Injector Outputs (7 & 8 Can be used for Aux Functions on 6 or less cylinders)
2 Ignition Outputs - if 1 output is used (IEX, CDI-8 etc) other output is Auxiliary
3 Auxiliary Outputs (cooling fan, fuel pump, wastegate etc..)

MoTeC M800 Plug & Play ECU (OEM)

Also available amongst MoTeC's wide range of engine management options are the discreet M800 Plug & Play systems.

These ECUs are designed as plug in boards to replace the OEM computers in a number of high performance late model vehicles. These units provide the flexibility and performance of a MoTeC M800 ECU without the necessity of rewiring the car or building adapter looms.

M800 Plug & Play ECUs are built with the same options as a standard M800, though there are some limitations due to factory plug designs. To assist with the tuning of your vehicle they can also be supplied with a start up engine map.

Currently available are:

P/N **M800-EVO4-8** - M800 OEM ECU FOR EVO 4-8
P/N **M800-EVO8GSR** - M800 OEM ECU FOR EVO EVO8GSR
P/N **M800-EVO9** - M800 OEM ECU FOR EVO 4-7 AND EVO9
P/N **M800-WRX7** - M800 OEM ECU FOR WRX7

$3,491.00 Per Card

M400/M600/M820/M880 Options

PART NUMBER	DESCRIPTION	OPTION PRICE	OEM	M400	M600	M820	M880
P/N: **M880 512K LOG**	512K Datalog M400/M600	$207.00		X	X		
P/N: **M880 1MLOG**	Enable One Meg Int Logging	$315.00	X			X	X
P/N: **M880 4M LOG**	Add 3 Meg Int Logging	$824.00					X
P/N: **M880 1LA**	Enable Single Wide Lambda	$771.00	X	X	X	X	X
P/N: **M880 1-2LA**	Enable Upgd Sngl To Dual Lam	$391.00	X		X	X	X
P/N: **M880 2LA**	Enable Dual Wide Lambda	$1,162.00	X		X	X	X
P/N: **M880 ADV**	Enable Advanced Functions	$629.00	X	X	X	X	X
P/N: **M880 CAM**	Enable Active Cam Control	$554.00	X	X	X	X	X
P/N: **M880 DBW EN**	Enable Drive By Wire	$635.00		X	X	X	X
P/N: **M880 ORB**	Enable Overrun Boost M600, M400	$326.00	X	X	X	X	X
P/N: **M880 10/12 EN**	Enable 10/12 Cyl Operation	$554.00				X	X
P/N: **M880 MULTI PU**	Enable Multipulse Functions	$326.00				X	X
P/N: **M880 PRO ANALYS**	Enable Pro Analysis	$1,268.00	X			X	X
P/N: **M880 REM LOG**	Enable Remote Logging	$987.00				X	X
P/N: **M880 SERVO ENAB**	Enable Dc Servo Operation	$326.00				X	X
P/N: **M880 TELEM**	Enable Telemetry Output	$987.00				X	X

X = Available

M4 / M48 Options

P/N: **M4 ADV**	Advanced tuning features, on-board data logging for M4	$515.00
P/N: **M48 ADV**	Advanced tuning features, on-board data logging for M48	$515.00
P/N: **M4 AFM**	Wide-range lambda option Adds one LSM-11 wide-range sensor input for M4	$391.00
P/N: **M48 AFM**	Wide-range lambda option Adds one LSM-11 wide-range sensor input for M48	$391.00

M2R / MLS Options

P/N: **M MLS ADV**	Advanced tuning features, on-board data logging for MLS	$515.00
P/N: **M M2R ADV**	Advanced tuning features, on-board data logging for M2R	$541.00
P/N: **M MLS AFM**	Wide-range lambda option Adds one LSM-11 wide-range sensor input for MLS	$391.00
P/N: **M M2R AFM**	Wide-range lambda option Adds one LSM-11 wide-range sensor input for M2R	$408.00

Capacitive-Discharge Ignitions

For Single and Dual coil CDI applications using conventional distributed spark or for Rotary applications, We recommend our proven single and dual channel CDI boxes. Over 100 millijoules of energy is available per spark and the hardware is produced to hang tough under this kind of operating condition in a racing environment.

P/N: **M CDI-1 M&W**
$607.00

P/N: **M CDI-2 M&W**
$745.00

P/N: **M CDI-4 M&W**
$1070.00

P/N: **M CDI-8**
$2,169.00

The Motec CDI-8 answers the call for world-class ignition capability in a compact, rugged package. Designed to drive up to eight low-impedance CDI coils. The CDI-8 can operate in ECU slave mode or in stand-alone mode with Windows spark-mapping software.

The CDI-8 boast features like Autosport connectors and CAN-based diagnostics.

Reliable, refined circuitry can deliver full 450-volt primary voltage at 15,000 revs (30,000 RPM for 4 cyl). Output stages can deliver up to 200 amps into a CDI coil primary without damage. CDI links into the vehicle network CAN bus to provide instant diagnostic messaging. Simply the best CDI available anywhere. CDI-8 has been proven on engines producing more than 3000 Horsepower.

Capacitive-Discharge Ignitions Accessories

Capacitive-Discharge Coils

CDI-8 Wiring

10´ unterminated harness
with Autosport connector
P/N: **M CDI-8H**
$662.04

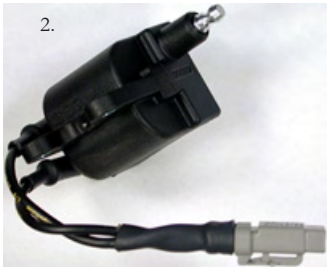
1. Twin Output CDI coil assembly
P/N: **M CDI 583740**
$112.70

2. Single Ended CDI coil
P/N: **M CDI 551 101**
$125.00

3. Double Ended CDI coil
P/N: **M CDI 551 102**
$145.00

4. Single Ended CDI
Highest Output on the Market
P/N: **M CDI 832757A4**
$92.00

1.

2.


3.

4.

Coil-Near Plug Inductive

1. Coil-near plug w/integral ignitor
P/N: **M DEN-580**
$93.80

2. Termination kit
P/N: **M DEN 580 TERM**
$6.61

Denso 580 production spark plug wire
P/N: **M DEN 580 WIRE**
$30.08

Custom made Spark Plug Wires available
$50.00 each

1

2

Like Thunder and Lightning

The Denso 580 Coil Near Plug features a built in Ignitor making them an excellent choice for ignition because they eliminate the need for an external ignitor between the ECU or Ignition Expander and the coil. Do they have a good spark? We have had success using them to ignite the spark under 20 PSI boost on some 2000 Hp Engines!

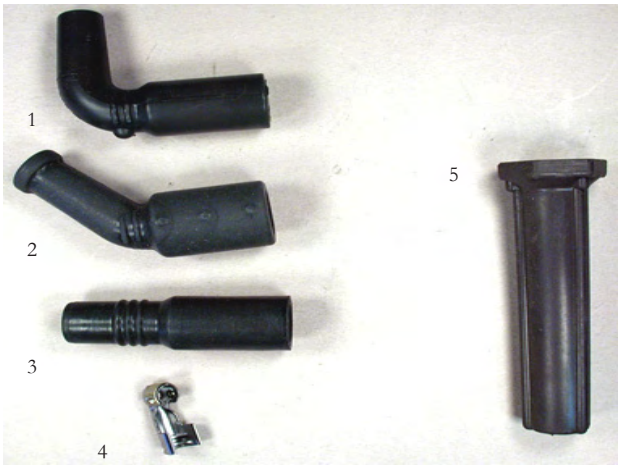
Denso Termination

1. 90º coil-end boot
P/N: **M 12-2220**
$5.67

2. 45º coil-end boot
P/N: **M 12-3659**
$4.00

3. Straight coil-end boot
P/N: **M 12-2254**
$2.42

4. Coil-end termination
P/N: **M 12-2977**
$ 1.19


1
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7mm Spark Plug Wire (*not shown*)
P/N: **M 015561**
$2.00/ft.

5. Straight Spark Plug Boots
P/N: **M 12-2264**
$2.10 ea

MoTeC Mitsubishi Diff Controller

1. Mitsubishi Diff Controller

P/N: **M MDC**

$1,843.00

The Mitsubishi Diff Controller (MDC) is a direct replacement for the Active Centre Diff (ACD) controller for the EVO 7, 8 and 9 models. The MDC is a fully programmable centre diff controller. Six different diff control mode are selectable from the standard ACD button located on the dash board. The modes include 0% and 100% lock and four user programmable modes. The MDC can be used on vehicles fitted with Active Yaw Control (AYC) but the AYC will be disabled.

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Multi Coil Inductive

1. Mitsu 6-cyl coil pack

6-cyl wasted spark

P/N: **M 6-D846251**

$235.04

2. 4-cyl coil pack

w/integral ignitors

(ECU controlled only)

P/N: **M 4-2100**

$150.00

MoTeC Ignition Expander

The MoTeC Ignition Expander enhances the ignition control capability of any MoTeC ECU . The MoTeC IEX will allow a single MoTeC ECU output to control up to 8 individual coil drivers.

P/N: **M IGN EX**

$412.00

Modified for use w/Autosport Connector

$779.66

Modified for use w/Denso 580

$437.00

Ignition Expander 10 foot Unterminated Harness

P/N: **M IGN EX H 10**

$148.15

MoTeC Traction Control Multiplexer

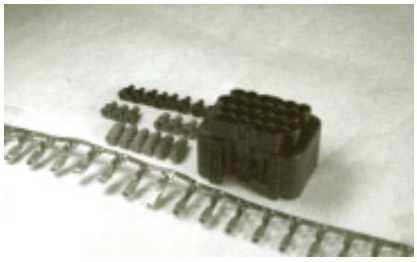
The MoTeC Traction Control Multiplexer goes between the ECU and the wheel speed sensors It gathers the speed information from the 4 wheels and calculates the ground speed from the fastest rolling wheel and speed difference from the driven wheels. The MoTeC Traction Control Multiplexer is very useful in allowing 4 separate speed channels to be brought into one input of the ECU

P/N: **M TC MUX**

$412.00

Did You Know?

The MoTeC ECU software will not let you perform an ignition test while using the ignition expander. However you can easily make a jumper and change the ignition setup in the software to 1 coil. Then you can go into the ignition test screen, and use the jumper on the harness at the Expander connector (Expander unplugged) and test each coil Output



IGN EX / TC MUX Harness Spares

18-way plug set for M IGN EX and M TC MUX

P/N: **M ECONO 18**

$42.00

MoTeC Beacon Transmitter and Receiver

Transmitters and receivers offer 1,000 different codes,

to avoid conflicts with competitors' beacons.

To change channels on the transmitter, simply open the cover by removing the screws and adjust the dip switch inside to the desired channel. The BR-2 can be configured using the Dash Manager software and the Beacon Configuration Utility which comes with Dash Manager

1,000-channel IR beacon transmitter
Includes cable, angle bracket
for 1/4² camera mount.
Transmitter sets up on the track.

P/N: **M ADL BTX**

$683.00

Beacon Reciever 2 - Autosport
microterm connector

CAN capable with increased accuracy

P/N: **M ADL BRX-2**

$640.00

MoTeC GPS

This GPS device is based on a GPS engine from Hemisphere GPS. It provides a true non-interpolated 10 Hz or 20 Hz output enclosed in a motorsport aluminum case. Serial output conforms to NMEA standard RS-232 protocol at 57600 baud rate. There is also a speed output pulse for applications that don't accept serial data. This item is replacing the Real Time Clock with GPS addon.

P/N: **M GPS BL**

$900.67
With upgrade from 10 Hz to 20 Hz

$1,635.67

Specifications:

12-channel GPS engine.

Horizontal accuracy < 1 meter at 95%

Update rate of 10 Hz or 20 Hz optional.

Screw on SMA antenna connector.

57600 baud serial, other rates available upon request

NMEA standard $GPGGA and $GPRMC data

Digital output pulse:	0-5v 50% duty cycle
	94 Hz per 1 m/s
	940 Hz per 36 km/h
	1933 Hz per 46 mph

(can be connected to inputs which have a 12v pull up resistor but output will still be 0-5v square wave)

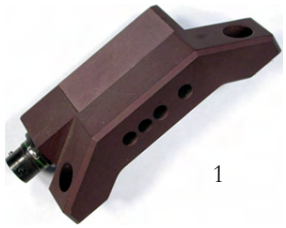
Power Requirements:

Supply Voltage:	6 to 18 VDC
Current Consumption:	380 mA at 12v

Environmental:

Temperature Range:	-30° to 70° C
Housing Material:	6061 Aluminum
Dimensions:	3.95 in x 2.7 in x 0.9 in
	100 mm x 69 mm x 23 mm
Weight:	157 grams w/o antenna

Billet Shift / Warning Indicator



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Black anodized billet aluminum,

recessed-clear LEDs, high intensity

Billet shift and warning indicator

P/N: **M ADL SHIFT 4LE**

1. Featuring Autosport Micro-connector.

$231.81

2. Featuring flying lead with DTM connector

$199.00

3. With 6 LED lights

P/N: **M ADL SHIFT 6LE**

$249.00

4. With 9 LED lights

P/N: **M ADL SHIFT 9LE**

$259.00

CAN based Shift Light Modules. Each LED is fully independent as to the purpose and the same light can be used for multiple functions.

5. With a flat base

P/N: **M SLM**

$463.00

6. With an angled base

P/N: **M SLM USA**

$590.00

Acceleration/Yaw

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5. Accelerom. 4G, one axis,

P/N: **M ADXL-1**

-with DTM connection

$257.18

-with Autosport connection

$309.40

6. Accelerom. 4G, three axes, DTM

P/N: **M ADXL-3**

-with DTM connection

$528.64

-Autosport micro aluminum housing

$683.01

Single Axis Yaw Rate Sensors

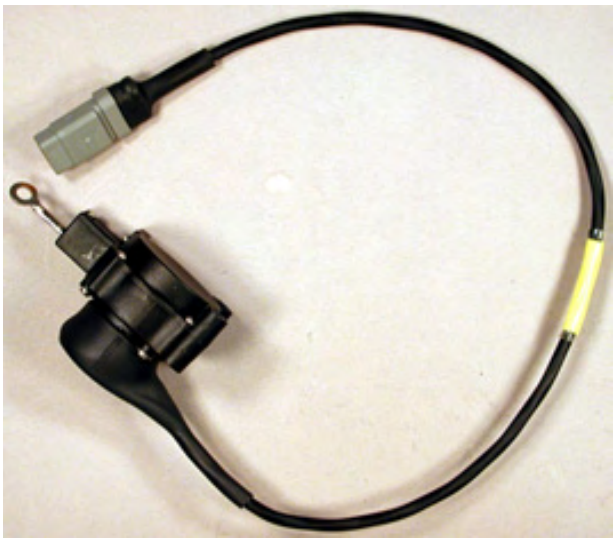
7. P/N: **M YAW 100**

$550.00

8. P/N: **M YAW 200**

$550.00

String Potentiometers



ADL String Potentiometers. Ring loop on end of cable makes attaching easy. Especially well suited to throttle or other pedal or lever position. Can easily be wrapped around a steering shaft to give steering angle. Available in 2 lengths 10 inch and 4.7 inch

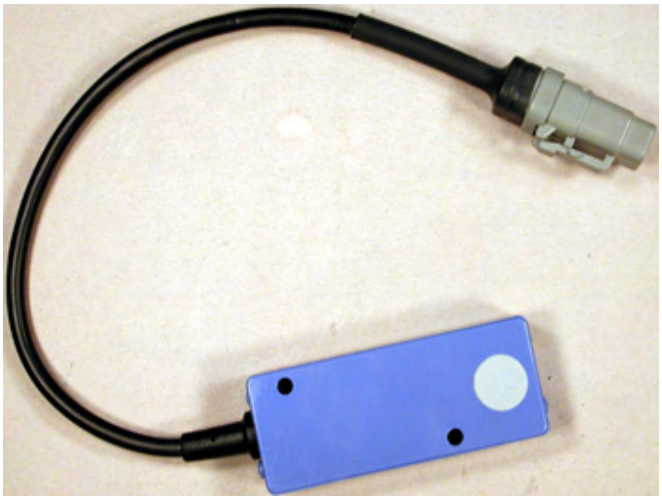
P/N: **M ADL SPOT 10**

$301.00

P/N: **M ADL SPOT 4.7**

$299.35

Ride Height Sensors



Ultrasonic Ride Height Sensors. Reads range from 1 inch to 10 inches. Alternative to Lasers

P/N: **M ADL RHS**

Ultrasonic Sensor with DTM

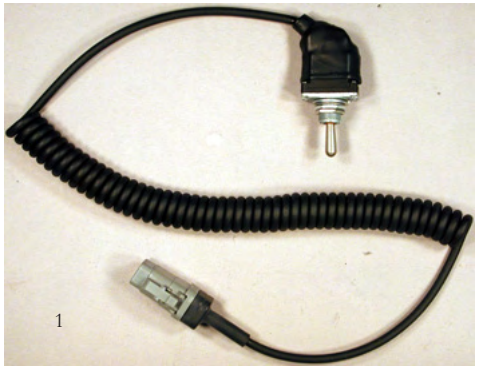
$743.00

Ultrasonic Sensor with Autosport

$809.00

Laser Sensors Available - Call Us

Steering-Wheel Switch Assembly



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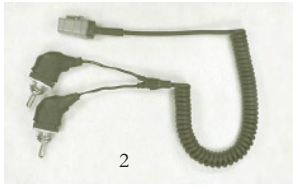


2

Sport Dash and ADL steering-wheel switches. For alarm-acknowledge, scrolling alphanumeric display, and ADL mode Terminates w/ 6-pin DTM

1) P/N: **M SD SW H**

$131.76

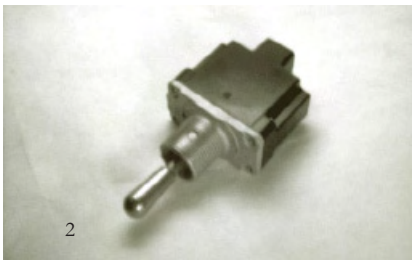
2) P/N: **M ADL SW H**

$295.00

Motec Hardware

MS Switches

1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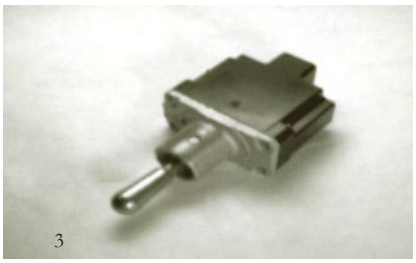
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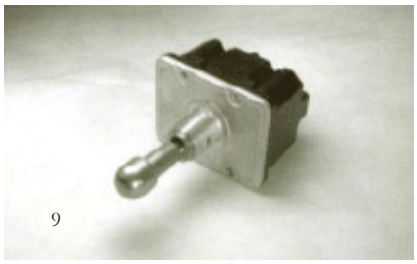
9

10

1. 4-position joystick

Use for mode selection/alarm

P/N: **M SW-4JOY**

$265.72

2. Centered SPDT nonlock

P/N: **M SW 1TL1-1**

$32.61

3. SPDT centered

P/N: **M SW 1TL1-1A**

$50.68

4. SPST one-pole on-off

P/N: **M SW 1NT1-2**

$30.80

5. SPST, both positions lockout

P/N: **M SW 1NL1-2D**

$54.49

6. SPST, one-position lockout

P/N: **M SW 1NT1-3F**

$45.54

7. SPST momentary

P/N: **M SW 1NT1-6**

$24.91

8. SPDT centered momentary.

Common for switching dash modes, paging through display & alarm acknowledgment

P/N: **M SW 1NT1-7**

$30.80

9. DPDT, 3 positions lockout

P/N: **M SW 4NT1-12A**

$81.40

10. Switch cover, silicone, most colors

P/N: **M SW N1030-2501 - Grey**

P/N: **M SW N1030-2503 - Yellow**

P/N: **M SW N1030-2508 - Red**

$5.19

Linear Position Sensors

25 mm Linear Position Sensor

P/N: **M LPS 25**
DTM terminated
$270.55
Autosport terminated**
$331.53

50 mm Linear Position Sensor

P/N: **M LPS 50**
DTM terminated
$227.12
Autosport terminated**
$288.10

75 mm Linear Position Sensor

P/N: **M LPS 75**
DTM terminated
$227.12
Autosport terminated**
$288.10

100 mm Linear Position Sensor

P/N: **M LPS 100**
DTM terminated
$229.98
Autosport terminated**
$290.96

150 mm Linear Position Sensor

P/N: **M LPS 150**
DTM terminated
$270.55
Autosport terminated**
$331.53

200 mm Linear Position Sensor

P/N: **M LPS 200**
DTM terminated
$270.55
Autosport terminated**
$331.53

***Autosport termination with* P/N: MS ASL606-05SN.**

Call for pricing on any other Autosport termination.

Aerodynamics

1. 8 Channel Aero Sensor

P/N: **M AERO 8**

$1,789.00

The M Aero 8 Sensor is a new sensor produced specifically for Aerodynamic test data acquisition by MoTeC USA. It features a user selectable Ratiometric or Absolute voltage output. Measures from -60 Inches of Water to +60 Inches of Water from static reference port. Mounts standing up (as pictured) to avoid erroneous readings based on lateral or longitudinal G force. Mating Connector is AutoSport AS606-35PL

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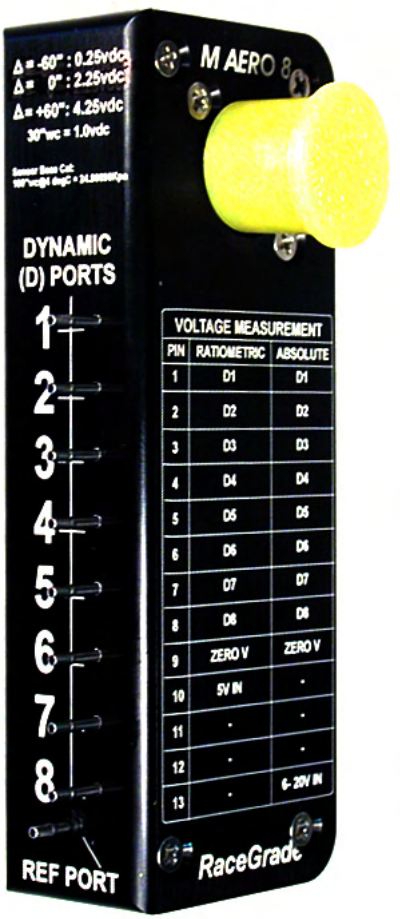
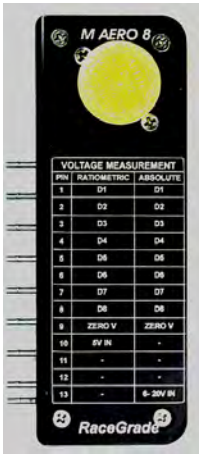




2. 4 Channel Aero Sensor

P/N: **M AERO 42**

$1,270.00

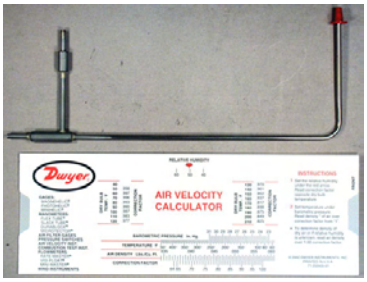
2.

3. Pitot Tube Asssembly

P/N: **M AERO PITOT**

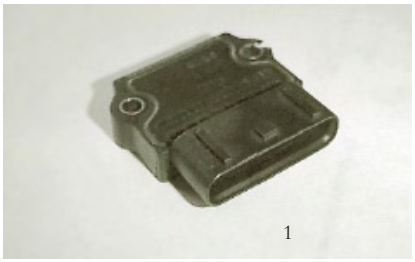
$96.86

3.



Multi-Channel Ignitors

1. Mitsu 2-channel ignitor
P/N: **M 4-D867941**
$249.59
2. Mitsu 3-channel ignitor
P/N: **M 6-D999251**
$258.61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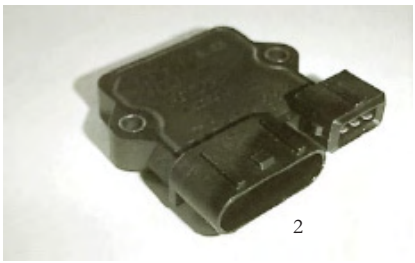
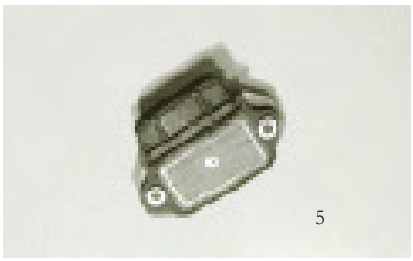

2

3. Bosch 1-channel ignitor
P/N: **M 0227 124 D**
$181.29
4. Bosch 2-channel ignitor
P/N: **M 0227 200**
$172.40

3

4

5. Bosch 3-channel ignitor
P/N: **M 0227 203**
$294.29
6. Bosch 4-channel ignitor
P/N: **M 0227 211**
$283.50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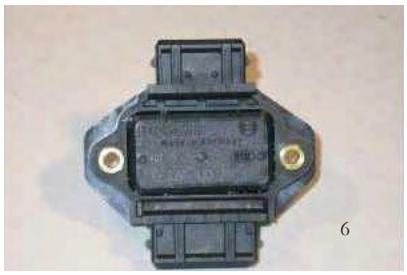

6

Why Do I need an Ignitor - what do they do?

An ignitor is an amplifier that converts a low current signal into a high current signal. In this case the coil trigger signal coming from the ECU is low current. The ignitor uses this low current signal to trigger the coil itself which requires high current.

Why doesnt the MoTeC have a built in ignitor?

Since the part that actually triggers the coils ia a high current device, it gets extremely hot during normal operation. That heat when placed in close proximity to the sophisticated microprocessor controlling your engine can cause it to degrade over time. Also, should the ignitor ever fail - it can be easily accessed for replacement - no need to send the ECU in for repair. Lastly, without the constraints of a built in ignitor MoTeC gives you the freedom to trigger any type of ignition system making integration with your existing hardware as seamless as possible.

Termination kits for above:

For item #1, Mitsu 2-channel
P/N: **M 4-MITS TERM**
$15.00

For item #2, Mitsu 3-channel
P/N: **M 6-MITSU KIT**
$26.00

For item #3, Bosch 1-channel or #4, Bosch 2-channel
use M LK-7 KIT (see page 63)

Others available - Call$

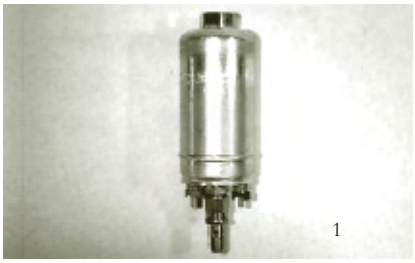
Fuel Delivery

All pump flow values are measured at 5 bar line pressure with a 14vdc supply

1. Bosch fuel pump, 220 lbs/hr
P/N: **M GFP 044**
$462.00

2. Bosch fuel pump, 150 lbs/hr
P/N: **M GFP 046**
$392.70

3. Pump fittings—metric Nylock nuts
Inlet fittings for 044 (to 18mm)
3a) 10 AN, P/N: **M 10AN 18BB**
$22.40
3b) 8 AN, P/N: **M 8AN 18BB**
$22.40
Inlet fitting for 046 (to 14mm)
3c) 8 AN, P/N: **M 8AN-14MM**
$11.90
Outlet fittings for 044, 046 (12MM to 6AN)
3d) M 6AN-12CU PUMP
$11.90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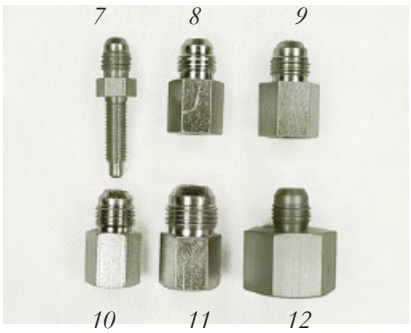
3a,b,c,d

How big of a Pump do I need?

In basic terms the amount of fuel you require to properly feed your engine depends on how much power you intend to produce and what rail pressure you wish to run. Typically a gasoline engine will require .5 lbs of fuel per hour for every 1 horsepower produced. If you have a 1000 horsepower engine and you intend to run 60 PSI of injection rail pressure, you will need a pump capable of delivering 500 lbs/hr at 60 PSI. Remember that a pump capable of delivering 2000 lbs/hr free flowing is worthless unless it can deliver the proper amount of flow at the pressure you want to run. Typically increasing pressure decreases a pump's volume output.

Regulator Fittings



7. Adjuster for Bosch motorsport regulators
P/N: **M 4AN-8MM**
$11.90

(8-11) Conversion: metric to AN -6
Converts STD metric regulator ends to AN lines
8. (12mm-6AN) P/N: **M 6AN-12MM**
9. (14mm-6AN) P/N: **M 6AN-14MM**
10. (16mm-6AN) P/N: **M 6AN-16MM**
11. (14mm-8AN) P/N: **M 8AN-14MM**
$11.90

12. Return line fittings
Hose barb-AN line
P/N: **M 6AN-16MM BULK**
$16.80

Fuel:

Filters

1

1. High press.
replaceable element
$Call

2

2. Fuel filter, high pressure
P/N: **M GF 601**
$21.71

3,4

3. Aeromotive fuel filter, 10 micron
-10 female ends
P/N: **M GFA 123-10**
$131.50
5a. Replacement paper element
P/N: **M GFA 123/ELE10**
$19.00

5a,b

4. Aeromotive 100-micron
prefilter, -10F
P/N: **M GFA 123-100**
$166.68
5b. Replacement stainless-steel element
P/N: **M GFA 12602**
$79.45

6b 6c

6

6. Aeromotive filter fittings
(with o-ring)
(not shown) 10AN male x 10AN
P/N: **M GFA 123/10-10**
$18.00
6b. 10AN male x 8AN
P/N: **M GFA 123/10-8**
$18.00
6c. 10AN male x 6AN
P/N: **M GFA 123/10-6**
$18.00

Fuel:

Pulse Damper

1. Pulse Damper

Connect to fuel rail to eradicate pressure pulses which cause differences in fuel flow

Recommended for all applications especially for those with large injectors and less than 8 cylinders

P/N: **M DAM032**

$109.24

Pressure Regulators

1. Pressure, fixed single 3-bar

P/N: **M 0280 213**

$82.22

Pressure, fixed 2.5-bar

2. P/N: **M 0280 214 - single**

$82.87

3. P/N: **M 0280 215 - dual**

$70.00

4. Pressure, fixed dual 3.5-bar

P/N: **M 0280 297**

$121.59

5. Pressure, fixed single 5-bar

P/N: **M B280 502**

$245.00

6. Pressure, adj dual 2.5- to 5.5-bar

P/N: **M B280 714**

$846.30

7. Pressure reg., adj. single inlet

P/N: **M B280 740**

$846.30

Pressure reg., adj.

8. P/N: **M B280 741 - dual 2-5 bar**

9. P/N: **M B280 742 - dual 3-12 bar**

$781.72

10. Aeromotive -6 fitting, single rail

adjustable from 35 to 80 psi

P/N: **M A 131-05**

$275.73

Aeromotive -8 fitting, dual rail

adjustable from 35 to 80 psi

P/N: **M A 131-09**

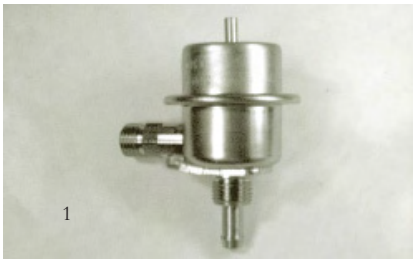
$274.80

11. Nupro - 1/4 NPT Male Single Pressure Relief

adjustable from 35 to 55 psi

P/N: **M RELIEF VALVE**

$45.00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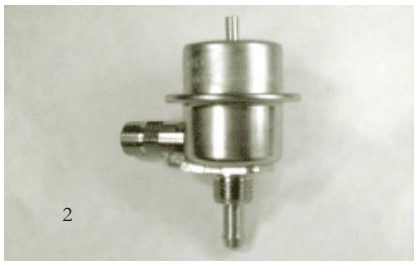
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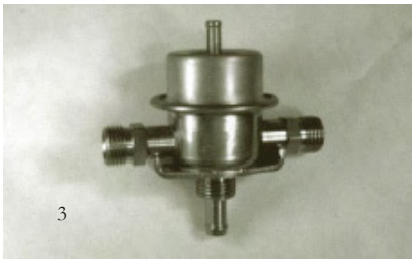
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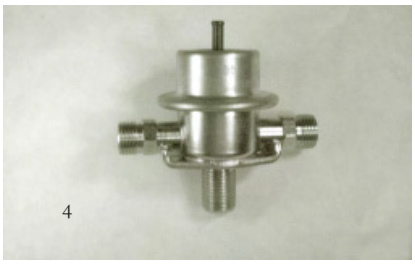
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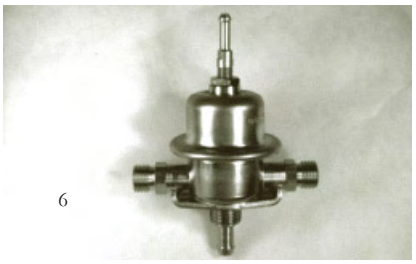
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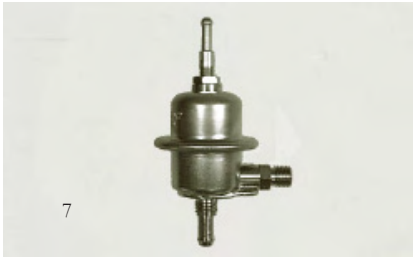
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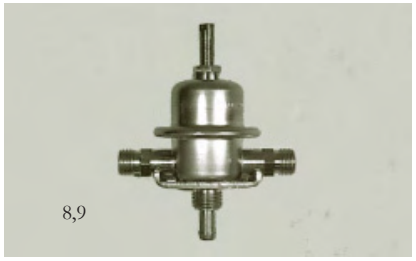

8,9

10

High Impedence Injectors

1. Bosch Injector, 36 lbs/hr, 12ý

P/N: **M 0280 791**

$134.00

2. Bosch Injector, 41 lbs/hr, 12ý

P/N: **M 0280 6 030**

$117.00

3. Multec Injector, 47 lbs/hr, 12.4ý

P/N: **M 2013**

$133.77

1

2

3

MoTeC MegaFlow Injector

1. Extremely High Flow Injector, 280 lbs/hr, 2.2ý

Custom Stainless Steel design. Recommended only for all out Methanol Engines. Largest Injector Flow rating available exclusively through MoTeC

Requires Mechanical Fuel Pump for proper volume!

P/N: **M INJ H280**

$305.00

Injector Flow Ratings

In order to increase the flow of fuel from your injector you must raise the fuel pressure. Some injectors such as the Multec because of their design will fail to open at more than 58 PSI. The Bosch Style can run with a much higher fuel pressure but, increasing pressure does not return a linear increase in fuel flow. For example in order to double the flow of an injector which is operating at 50 PSI - you must square the pressure which would require 200 PSI of fuel. Generally if additional fuel flow is required, you are much better choosing an injector which has a higher flow capacity. Generally increasing duty cycle beyond 85 percent is not recommended because it can cause your injectors to overheat and fail. For your convenience, all of our injectors are flowed at 50 PSI and 85% Duty Cycle at 6000 RPM

Injector Current

With a MoTeC ECU, you simply input the current requirement of the injector and the software automatically configures the proper injector drive. Measure the resistance of the injector and divide that value into 12 volts. For example a 4 ohm injector divided into 12 is 3 - so enter 3 amps in the Software.

Low Impedence Injectors

1. Multec Injector, 26 lbs/hr, 2.5ý
P/N: **M 2011**
$93.81

2. Multec Injector, 33 lbs/hr, 2.1ý
P/N: **M 2012**
$93.81

3. Bosch Injector, 37 lbs/hr, 4.8ý
P/N: **M 0280 803**
$130.98

4. Bosch Injector, 44 lbs/hr, 2.5ý
P/N: **M 0280 400 M**
$181.32

5. Bosch Injector, 59 lbs/hr, .7ý
P/N: **M 0280 351**
$246.29

6. Multec Injector, 71 lbs/hr, 2.2ý
P/N: **M 2014**
$162.40

7. Siemens (Bosch Style) Injector, 80 lbs/hr, 2.5ý
P/N: **M 3105**
$126.00

8. Multec Injector, 93 lbs/hr, 2.2ý
P/N: **M 2015**
$162.40

9. Bosch Injector, 170 lbs/hr, 5.0ý
P/N: **M B170 G**
$80.03

10. Bosch Injector, 170 lbs/hr Alcohol, 5.0ý
P/N: **M B170 A**
$105.91

Power Supply

Power Distribution Modules

MoTeC PDMs are designed to replace conventional relays, fuses and circuit breakers by providing electronically switched power to the various electronical systems in the vehicle, including motors, lights, solenoids and electronic devices such as ECUs and data systems. It also provides full diagnostic information, including output currents and voltages, and error status that can be monitored on a PC or transmitted via CAN to a display or logging device.

1. PDM16 Power Distribution Module

8 20A outputs and 8 8A outputs which can be paralleled for higher currents. Built in short circuit and thermal overload protection.

P/N: **M PDM16**

$3,160.00

2. PDM32 Power Distribution Module

8 20A outputs and 24 8A outputs which can be paralleled for higher currents. Built in short circuit and thermal overload protection.

P/N: **M PDM32**

$5,228.00

PDM16

PDM32

Fluid Level Sensor

Electronic Sending Unit For Fuel, Oil, and Potable Water

Fluid level sensor.

Length = 14-inches.

Output Voltage = 0-5 volts.

P/N: **M P155-CGO-14**

$160.00

This ELECTRONIC SENDING UNIT for FUEL, OIL, and POTABLE WATER tanks provides a continuous readout of the liquid level in your tank

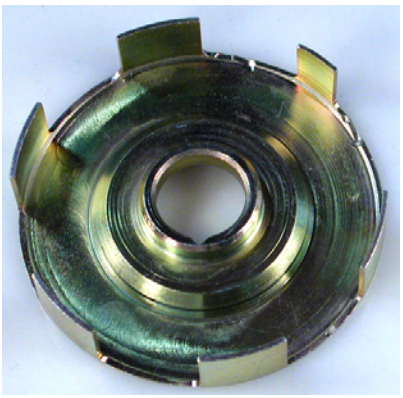
Trigger Wheels

Porsche Narrow-tooth distributor chopper wheel, 6 cylinder

Clockwise

P/N: **M PCHOP CW**

$110.00



Porsche Narrow-tooth distributor chopper wheel, 6 cylinder

Counterclockwise

P/N: M PCHOP CCW

$130.00

Crank/Cam Trigger

1. Crank, 3/8² smooth mag sensor
P/N: **M 3025 SS13**
$192.00

2. Crank angle, GM mag sensor
P/N: **M 6-BAC-AD8**
$39.20

3. Crank, 3/8² threaded mag sensor
P/N: **M 4-APX-001**
$140.00

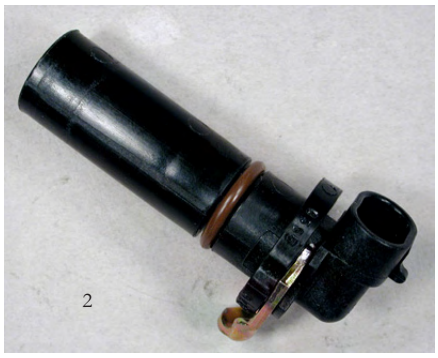
4. Crank/cam, 5/8² threaded mag sensor
P/N: **M 6-APX-003**
$177.52

5. Crank/Cam, magnet operated
P/N: **M MHALL 437**
$165.36

6. Samarium/cobalt magnet, 1/4 thd carrier
P/N: **M MHALL MAG ASB**
$29.03

7. Samarium/cobalt .115" diameter
(white side is south pole)
P/N: **M MHALL MAG**
$6.25

1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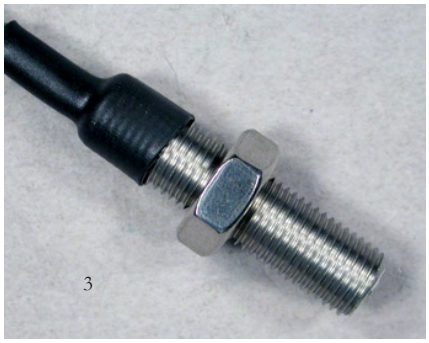
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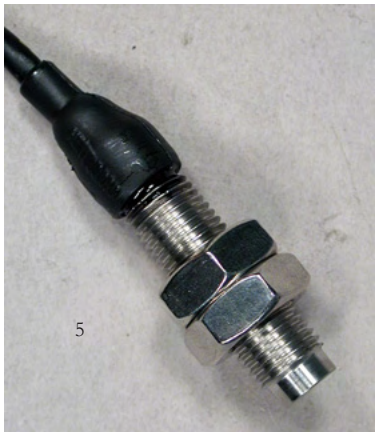
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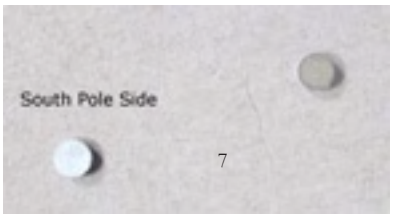
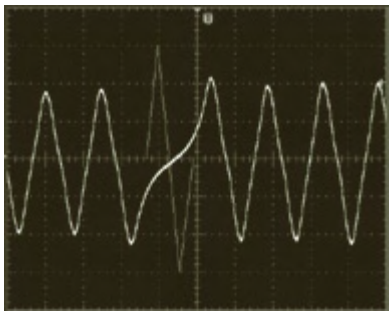


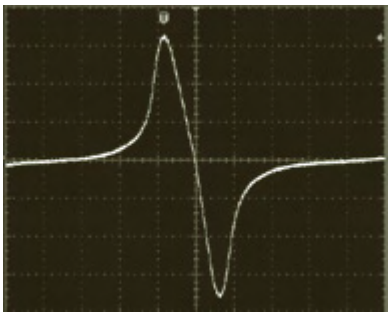
7

Mag Sensor Polarity

When using a magnetic sensor, the waveform produced by the sensor can be changed by reversing the polarity of the wires from the sensor. For your convenience, MoTeC sensors come pre-wired with a falling edge waveform.
See page 40 for more details.

Rising or Falling edge?

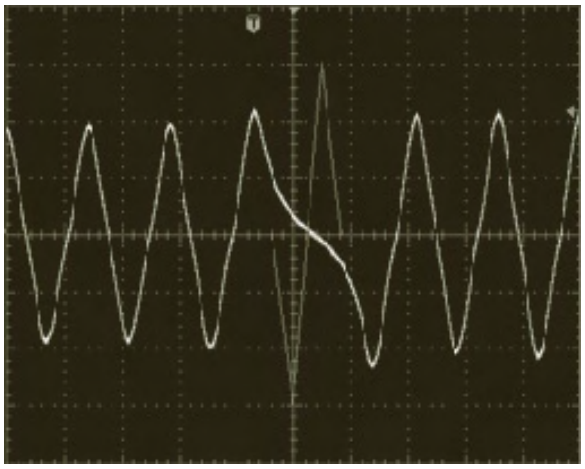


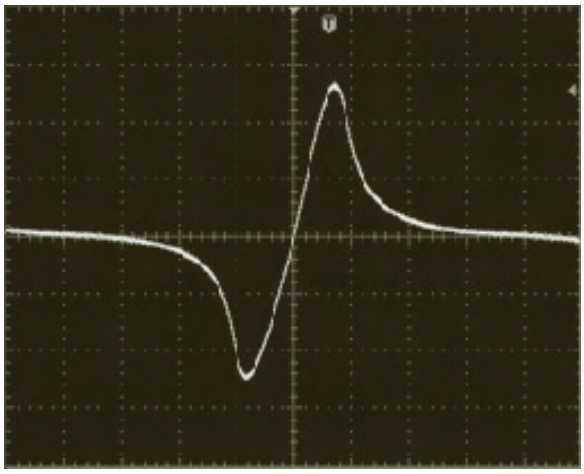


To know for sure if you sensor produces a rising or a falling edge you need a Digital Volt/Ohm Meter or DVOM. Disconnect the ECU from the Harness. Plug the red lead of the meter into the signal terminal of the ECU Header and the black lead to the 0v terminal. Place a steel object (like a screwdriver) against the sensor. Set the DVOM to read DC volts. Quickly remove the metal from the sensor and watch the direction the voltage goes either positive or negative. If the voltage goes negative, the sensor is a falling edge sensor. If the voltage goes positive, the sensor is a rising edge signal.

Mag Sensor Falling Edge Polarity

When viewing the waveform on a labscope, the direction of travel of the voltage line as it crosses the 0v line determines the sensors active edge. This edge will not deviate in time with respect to RPM. The opposite edge will. This corresponds to the point at which the trigger tooth passes the center of the sensor.





Mag Sensor Rising Edge Polarity

Pole Diameter

It is important to remember when designing a trigger wheel with a mag sensor, that the width of the tooth in degrees should be no less than 1 times the width of the pole piece in degrees and no more than 2 times this number of degrees. Some mag sensors have a stainless steel shield on them making it difficult to see the true pole diameter. Rub the sensor in some steel shavings to give you an idea of the pole piece size.

Controls

Air Control Valves

1

2

1. Air-valve boost control
P/N: **M 19-152**
$62.00

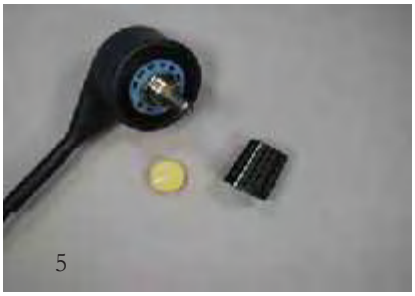
2. Bosch 2 Wire
P/N: **M 0280 512**
$308.87

3

Controls

Trim Switches

4



5

3. Mini Dashboard Mounted Trim Switch, steps 1 to 12-positions, user adjustable.
P/N: **M DS-12**
$153.46

4. Mini four position MAP Switch for M800 series running firmware v3.3 or higher.
P/N: **M DSM-4**
$113.46

5. Dashboard mounted Trim Switch . steps 1 to 11-positions, user adjustable.
P/N: **M DS-11**
$157.04

Boost Control has never been easier

The MoTeC ECU's offer unparalleled levels of boost control. In addition to having feedback type wastegate control, various inputs can be used to regulate boost for certain parameters. For example, when using a wheelspeed input, MoTeC allows boost based on wheelspeed and rpm - or boost based on gear position and rpm. A multiposition trim switch input can be used to allow the driver to manually select the desired boost level on the fly.

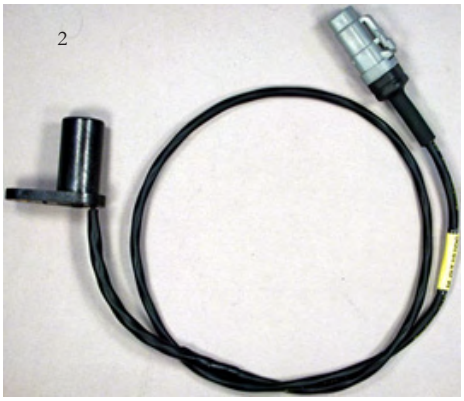
How can I use a Trim Switch?

The multiposition trim switch can be used in a number of ways. It is most commonly used to trim fuel or ignition but can also be used to trim boost if the wastegate is ECU controlled or can be used to select 1 of 9 or 11 different RPM limit levels on the fly without a laptop. Ask your MoTeC representative how you can use a trim switch in your application

Wheel Speed

1. Wheel speed, 7/16² threaded hall sensor, ferrous-tooth operated with DTM termination.
P/N: **M DHALL 437**
$170.78

2. GT101 Hall effect wheelspeeed ferrous-tooth operated
P/N: **M GT101DC**
$68.36



Calibrating Wheel Speeds

In order to properly calibrate the wheelspeed sensor in the ECU you must know the circumference of the tire. According to Geometry the circumference is equal to the diameter of the tire multiplied by Pi (3.14159). Unfortunately, your tire diameter will change when it is supporting the weight of the car. So the best way to get the tire circumference is to mark the tire and the ground, and then push the car until the mark on the tire is again back on the ground. Then measure the linear distance between the two marks. You can then divide this measurement into the distance you are calibrating for (1 mile = 5280 ft). The result is the number of tire revs per mile or KM. Then we have to multiply this number by the number of teeth on the trigger wheel. Finally, the total is divided by 10 to arrive at the calibration value. Circumference = 8.3 feet 5280/8.3 = 636 Number of teeth = 4 so 636(4) = 2544/10 = 254.4 Calibration value is 254.4

Manifold Pressure Sensors

1. Press. transducer, 500 kPa (60 PSI boost)

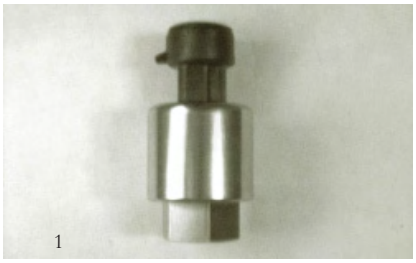
P/N: **M P155-75A-E3C**

$223.40

2. Adapter Harness to go from GM type 2-3 Bar Map to Kavlico

P/N: **M P155 75A ADAP**

$27.04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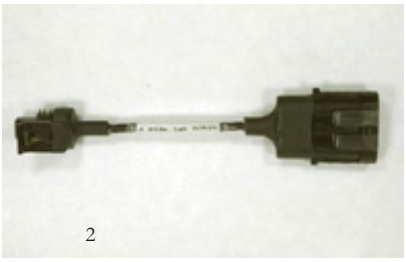

2

3. Pressure sensor, 100 kPa

P/N: **M 16-7039**

$62.40

4. Barometric Pressure sensor, 108 kPa

P/N: **M 16-6835**

$82.00

3

4

5. Pressure sensor, 200 kPa (15 PSI boost)

P/N: **M 16-9886**

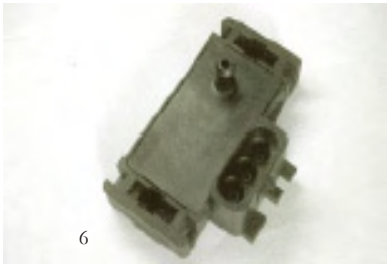
$62.40

6. Pressure sensor, 300 kPa (30 PSI boost)

P/N: **M 16-0749**

$62.40

5


6

7. Billet mount, blue w/filter

Accepts any M16 sensor

P/N: **M 16-SENMNT-BL**

$59.33

8. Billet mount, black,

Accepts any M16 sensor

P/N: **M 16-SENMNT-BK**

$59.33

7

8

How to Calibrate a Pressure Transducer

The Pressure Transducer which MoTeC offers for measuring pressure all output signal voltages beginning at .5 volts and ending at 4.5 volts. The range of the sensor is relateable to the AtoD counts in an ECU in the following way. At the bottom of the range, the sensor outputs .5 volts which is equivalent to 102 counts. At the top of the sensor's range, it outputs 4.5 volts or about 922 counts. If you interpolate the calibration table between these two points, you will have the correct calibration for the sensor - no matter what the range is.

MoTeC Sensors:

Pressure Sensors

1. Pressure transducer, 100 PSIG
P/N: **M P155-100G-E3C**
$223.40

2. Pressure transducer, 15 PSIG
P/N: **M P155-15G-E3C**
$223.40

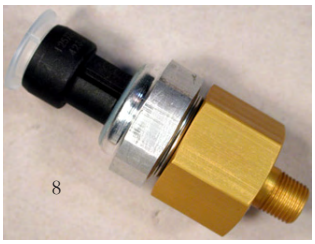
3. Pressure transducer, 150 PSIG
P/N: **M P155-150G-E3C**
$223.40

4. Pressure transducer, 300 PSIG
P/N: **M P155-300G-E3C**
$223.40

1-6

5. Pressure transducer, 1000 PSIG
P/N: **M P155-1000G-E3**
$240.65

6. Pressure transducer, 2000 PSI
P/N: **M P195-2000S-E3**
$397.00


8

8. 8-bar(0-120 PSIG) GM
P/N: **M P155 2230**
$80.00

Pressure-Sensor Unions

9. 3ANto-3AN bulkhead union
P/N: **M 3-983203/5924**
$10.87

10. 3AN-to-3AN coupler
P/N: **M 3-981503**
$5.50

11. 3AN-male-to-1/8"MTP-male coupler
Requires O-ring to mate with Kavlico sensor
P/N: **M 3-981603**
$4.79

12. Dash-3AN to dash-4AN coupler
P/N: **M 3-991902**
$8.52

9

10

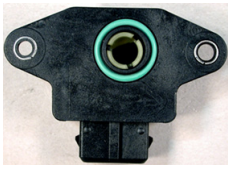
11

12

Sensors:

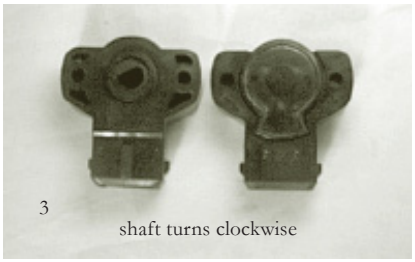
Throttle Angle

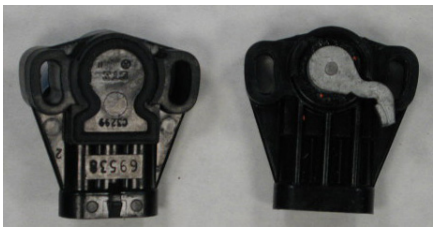
1. Bosch, D Drive CW
P/N: **M 0280 001**
$90.53
2. D drive CCW
P/N: **M 518-1**
$44.80


1
turns clockwise

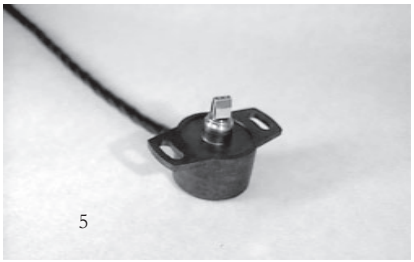
2
shaft turns counterclockwise

3. D drive CW
P/N: **M 518-3**
$47.60
4. Lever drive CW
P/N: **M 17-1293**
$158.63


3
shaft turns clockwise


4

5. Rotary-blade drive,
100° rotation
P/N: **M 518-2846-100K**
$240.00
6. Rotary-blade drive, 350 degrees
Used to create gear voltage
on sequential gear boxes
P/N: **M 518-RP5130-35**
$255.00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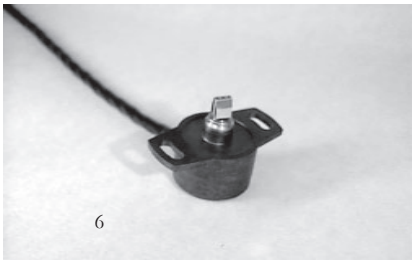

6

7. Noncontact hall CW
P/N: **M 580-06751**
$ 144.90

7

Lambda Sensors

1

1. Bosch LSM-11 4 Wire Wide Band

For use with M4/M48 ECU's and MoTeC ADL. Can also be used for Narrow Band

P/N: **M 0258 002**

$340.08

2

2. Bosch LSU-4 5 Wire Wide Band

For Use with M800/880 and PLM's Low cost High Accuracy

P/N: **M 0258 666**

$183.00

3

3. NTK UEGO PRO 5 Wire Wide Band

For Use with M800/880 and PLM's - Laboratory Grade Sensor

P/N: **M UEGO SENSOR**

$661.50

All three of these sensors feature 18mm X 1.5mm Threads

What is Lambda anyway?

Lambda describes an equivalence value in percentage of the chemically correct air-to-fuel ratio for any type of fuel. If the air fuel ratio measured in the exhaust pipe of an engine is at the chemically correct (stoichiometric) ratio of air-to-fuel, lambda is equal to 1.0. In the case of gasoline, lambda 1.0 is equivalent to 14.7:1 air-to-fuel. Lambdas less than 1.0 indicate the engine is running richer than stoichiometric, while lambdas greater than 1.0 indicate a lean mixture. If we measure a lambda value of 1.06 and we want a lambda value of .95, we simply increase the fuel delivered to the engine (pulsewidth) by 11 percent. This will place us exactly at .95 lambda. By using the Lambda Was or the Quick Lambda functions a tuner can quickly shape the fuel table to match the engine's exact requirements.

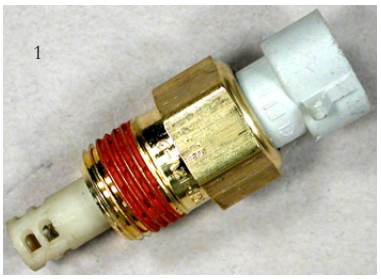
How long will the Lambda Sensor Last?

A Lambda sensor is designed as a consumable item which means like a spark plug, it wears out with use. Typically you may notice the sensor begin to slow down in its response to changes in lambda when it becomes worn out. This normally occurs in about 500 hours on unleaded type fuels but is reduced to 50 hours for lead. Like Spark Plugs, the sensor can be fouled in a matter of minutes with improper air fuel ratios and the sensor can crack if it is over torqued or dropped. For this reason, there is no warranty on Lambda Sensors.

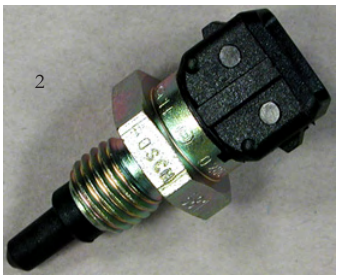
Motec ECU Sensors

Air Temp

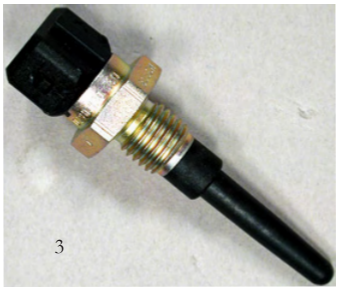
1. Air, NTC AC special
P/N: **M 25-7225**
$36.40


1

2. Air, NTC 12mm
P/N: **M 0280 039**
$41.33


2

3. Air, NTC 12mm long reach
P/N: **M 0280 060**
$53.03


3

Liquid Temp

5. Coolant, M12x1.5
P/N: **M 0280 023**
$41.43

5

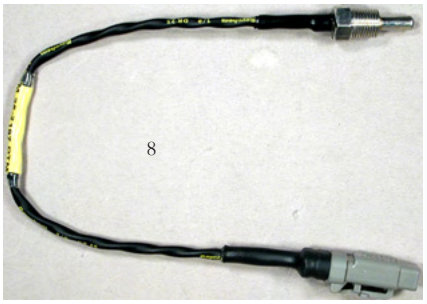
6. Coolant, 1/8 NPT
P/N: **M 0280 023M**
$51.00

6

7. Coolant, 3/8 NPT
P/N: **M 25-5227**
$36.40

7

8. 1/8 pipe stainess temp sensor with flying lead
P/N: **M 25-2197 D**
$69.22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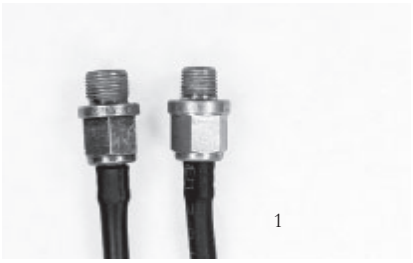
Head Temp


1

2

1. Cylinder-head, M12x1.00 LH
P/N: **M 0280 059**
$122.64

1, 2. Cylinder-head, M10x1.00 RH
P/N: **M 0280 070**
$126.21

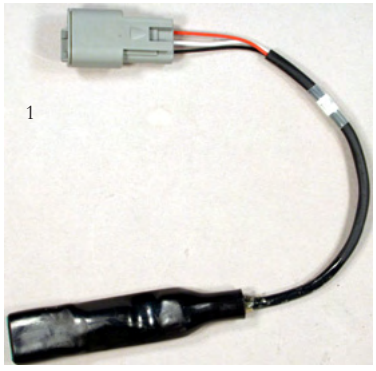
Tip:

Exhaust-temp measurement has never been easier or more affordable.
Thermocouple amplifiers can drive past either a temp input or an analog voltage input making them easy to configure into your system.

Open Ended or Closed Ended?

Open ended sensors react faster than closed ended sensors, however they do not last as long. What you gain in response time you give up in longevity.

Exhaust Temp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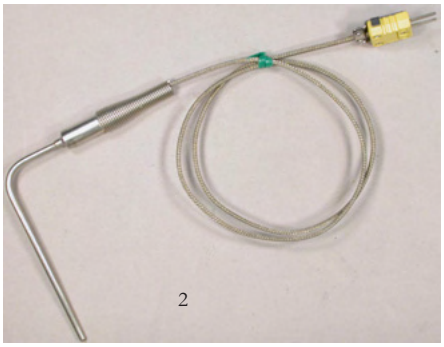

2

1. Thermocouple amplifier
P/N: **M TCA**
$217.00

2. K-Type Thermocouple
1/8" Closed end with 12" lead
(requires thermocouple amp)
P/N: **M TC2C**
$105.00

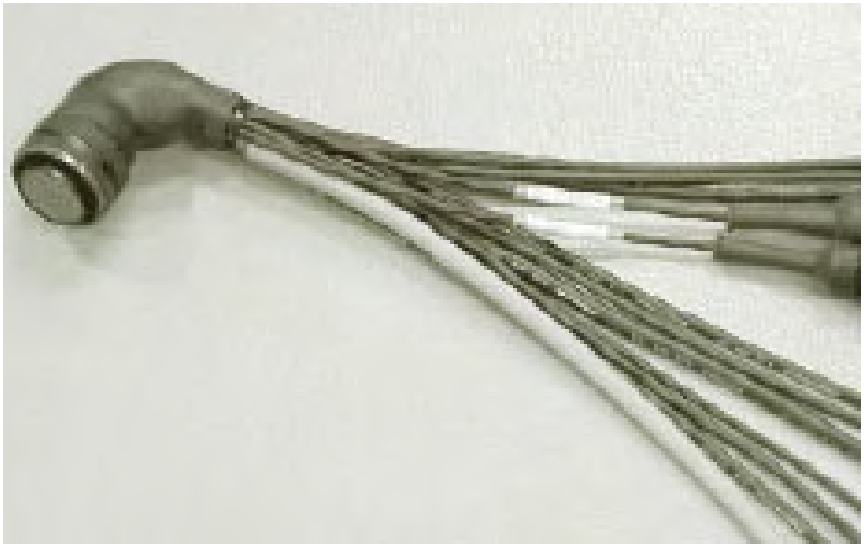
3

4

3. 1/8" K-Type Thermocouple stainless bung
P/N: **M TC SS20012WBT**
$20.58

4. 1/4" K-Type Thermocouple stainless bung
P/N: **M TC SS40064WBT**
$20.58

Plug-and-Play Basic or Custom-Made



Detail: sample custom ADL2 harness

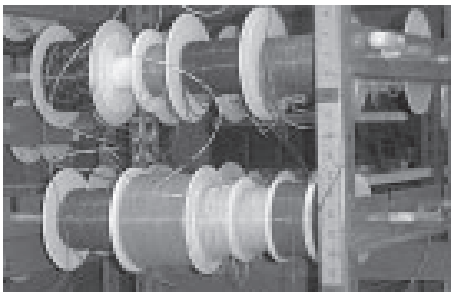
Motec ADL2 Hardware

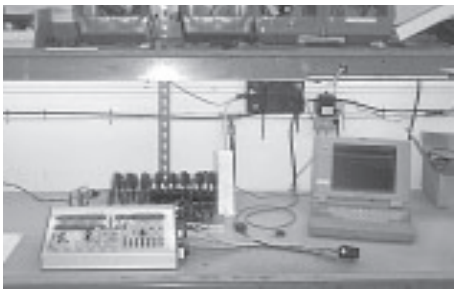
Custom ADL2 Harnesses

Custom harnesses are built to your exact specifications and priced by project. Call for a quote.

Most-specified options for custom ADL2 harnesses include:

- Autosport and Micro connections
- Raychem transitions/tubing
- Autosport junction boxes
- Custom length and breakouts





Call our wiring team

for a harness built to your specs—and ask about our outstanding designs for a variety of special purposes.

If we dont have what you need, we will make it.

Telephone

(714).895-7001

Fax

(714).897-8782

ADL / ADL2 / SD Harnesses

Motec ADL Hardware

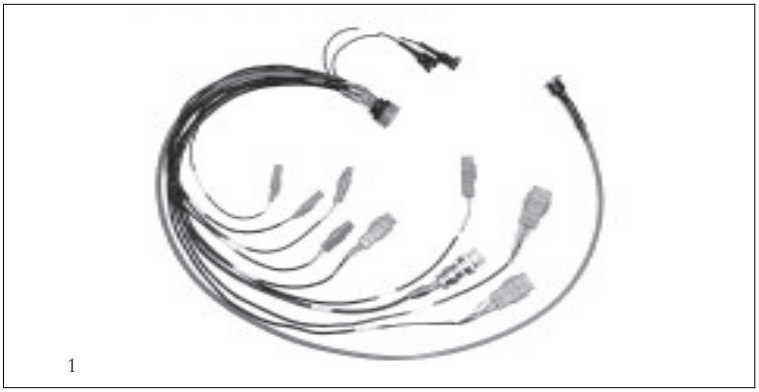
Basic Harness

Employs Tefzel conductors
Raychem DR-25 shrink

1. Basic Expandable
Dash Harness
P/N: **M ADL H30 I/O**
$962.81

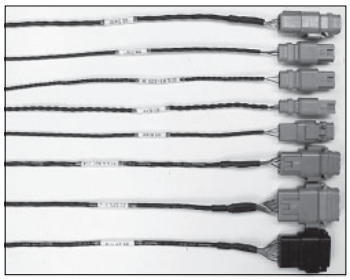
2. Add 20 I/O
to basic harness
P/N: **M ADL H50 I/O**
$524.00

3. Standard Sport Dash Harness
P/N: **M H SD STANDARD**
$962.81



1

Battery Lead - 24" (B2)
Analog Volt Input 1-10 - 34"(B4)
Analog Temp 1-4 - 39" (B5)
Switch In - 40" (B6)
Speed In 1-4 - 40" (B7)
Beacon - (B8)
Digital 2 - 30" (B9)
Lambda 1 - 18" (B10)
Lambda 2 - 18" (B11)
Aux Out 1-4 - 32" (B14)
RS-232 In - 24" (B15)



Harness Extensions

P/N: **M ADL BRX-2-EXT**
10' beacon receiver extension
$145.70
P/N: **M ADL COM-EXT**
10' comm extension
$71.25
P/N: **M ADL WS-EXT**
10' wheel speed extension
$86.25

Dash Harness Extensions

- Extensions connect the basic harness
  to the individual sensor
- Available in 5' and 10' lengths
- Sensor end of extension is terminated to suit the sensor
- ADL end is terminated with female MilSpec sockets

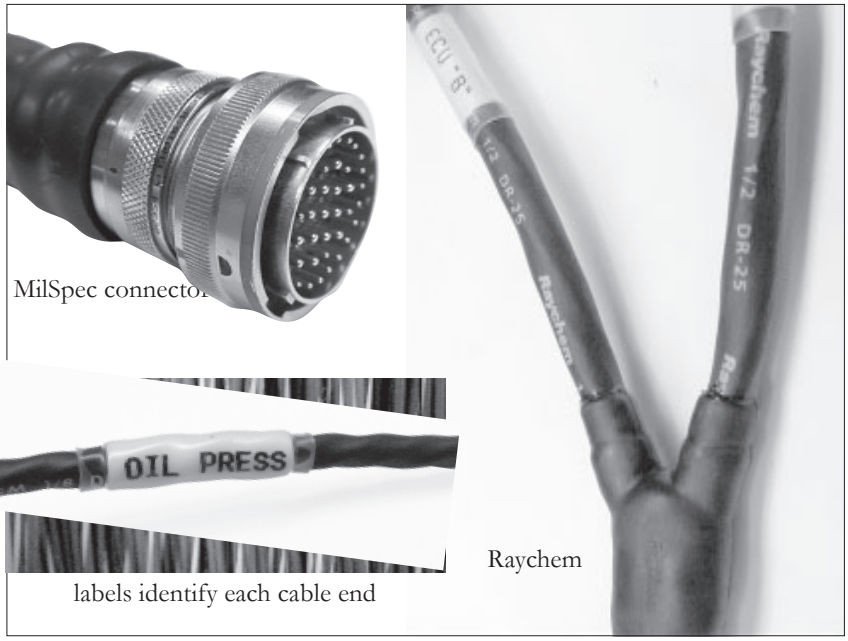
ADL Extension Types:

Beacon
Dual beacon
Pressure sensor
2-wire DTM
2-wire DTM
4-wire DTM
6-wire DTM
8-wire DTM
Lambda sensor
Air-temp Bosch
Air-temp GM
Engine-temp GM
Accel 1-axis
Accel 3-axis
Steering angle
Autosport micro

MoTeC Wiring

ECU Harnesses

Our craftsmen combine their design expertise with your concepts for outstanding results.



MilSpec connector

labels identify each cable end

Raychem

Lowest Cost—

Unterminated, Trim-to-Length Harnesses

Features:

- Tefzel conductors
- sold in 10´ unterminated length
- bundled and routed by customer

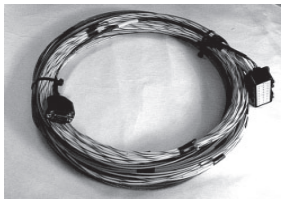
Available covering:

- High Heat Fiberglass tubing

1. M4 basic harness, 10´

P/N: **M4 H 10**

$378.00



2. M48 basic harness, 10´

P/N: **M48 H 10**

$378.00

(not shown) M400/600/800 harness, 10´

P/N: **M800 H10**

$625.00

M48 termination kit

P/N: **M48 TERM**

$84.00

Termination kits (not shown)

M4 termination kit

P/N: **M4 TERM**

$70.00

M800 termination kit

P/N: **M800 TERM**

$105.00

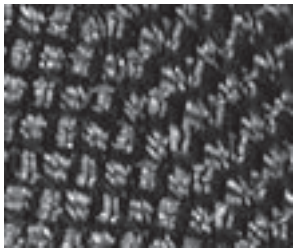
Full-Custom Harness

• Lightweight
• Raychem materials
• Tefzel conductors
• MilSpec or Autosport terminated
• Custom made for you by MoTeC in house
• Factory tested for plug-and-play operation

Typical 4 cylinder M4 Harnesses run $1,250 up
Typical 6 cylinder M48 Harnesses run $1,500 up
Typical 8 Cylinder M48 Harnesses run $1,750 up
Typical M400 -800/880 Harnesses run $2,200 up

Steps to build your Custom Harness

1. Choose what components you want included in the wiring harness.
2. Decide where on the car/bike/boat you want each of these components
3. Draw a diagram of the layout of the project
4. Call MoTeC and discuss your ideas with the wiring team
5. Measure distances in inches from the ECU Header to the components.
6. Provide MoTeC with the length requirements for the harness.
7. Receive your custom harness from MoTeC in 2 -3 Weeks



Heat Resistant Sheathing

• Lightweight
• Alternative to Raychem
•Several Sizes
•$Call for Pricing

ECU and Harness Kits

Honda/Acura 4-cylinder

Using Distributed Spark Ignition

P/N: **M4 HONDA**

$CALL

Using Distributorless Ignition System (included)

P/N: **M4 HONDA-I**

$CALL

Requires modification of stock distributor to operate with the ECU. Kit includes connection for stock MAP sensor, Air Temp, Coolant Temp and TPS. Basic File includes setup information configured to work with most standard ECU's. MAP sensor upgrade recommended for boost levels over 8 PSI. Inlcudes software, communications cable and T-shirt. For more details, contact your MoTec Representative

Mercruiser Marine Adapter Kit

Replaces Mercury ECU in stock harness

P/N: **M4 MERCRUISER**

$CALL

Easily attaches to your existing Harness and allows control of ignition and fuel curves. Sync sensor Rotor allows individual cylinder ignition timing trims and ECU even provides a datalog for analysis after you run the engine.

Update Units

1. M4 / M48 / MIL-Spec M8 Software update unit (SUU)

required for firmware updates

P/N: **M4 SUU**

$196.00

1

Note: M4 ECU's with serial number greater than 3000 do not require SUU to upgrade!

Comm Cables ECU-PC

3. Communications Cable for M48 / M8

Available in 6 or 20 foot lengths

P/N: **M RS-232 MK 3 add 6M for 20ft**

$174.00

4. MIL-Spec adapter cable for M4/M48/M8 MIL ECUs

P/N: **M RS-232 MS**

$80.00

5. 10' RS-232 Serial Cable

M4e and M800/880 with DOS Software

P/N: **M RS-232 M4E**

$8.51

6. Communications Cable for M48 / M8 with ADL link

Allows ECU data to be sent to ADL

P/N: **M RS-232 MK3 M**

$265.84

Modify Customer's exisiting M RS-232 MK 3 for ADL communications

P/N: **M RS-232 MOD**

$223.47

What is an M4e?

M4e refers to a new generation of M4. The difference between M4e and the older M4 version is the communications spec. The M4e has RS-232 communications which do not require a special cable. M4 ECU's with serial numbers greater than 3000 are the new M4e and do not require the special cable. Additionally no Software Upgrade Unit is required to upgrade the software version on the M4e.

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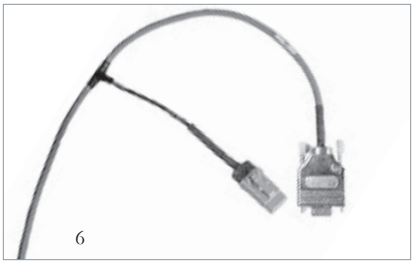

6

M4e Comms Pinout

9 Pin DSub

Pin 2 = TX - Connects to ECU Pin 22 Green Wire

Pin 3 = RX - Connects to ECU Pin 23 Orange Wire

Pin 5 = 0v - Connects to ECU Pin 21 Brown Wire

Comm Cables ECU-PC, cont.

1

2

3

1. CIM module

(computer-interface module)

Converts TTL to RS-232

P/N: **M CIM**

$174.00

2. CIM cable, connects ECU, ADL, and PC to CIM. More rugged design for permanent installation in vehicles.

P/N: **M4 CIM H, $144.00**

P/N: **M48 CIM H, $144.00**

P/N: **M8 CIM H, $144.00**

3. PC parallel-to-CAN cable. Required for PC comm using M800/880 ECU Manager software. Also used for firmware upgrades and logged data retrieval on the M800 family of ECUs running DOS EMP

P/N: **M ADL CAN**

$226.00

CAN Extension Cable 25 Foot

P/N: **M ADL CAN 25'**

$326.75

CAN Extension Cable 36 foot

P/N: **M ADL CAN 36'**

$346.88

Car-side CAN cable (not shown)

P/N: **M ADL CAR**

$97.22

MoTeC USB To CAN Adapter

The MoTeC USB to CAN adapter is used to replace the CAN interface cable (P/N **M ADL CAN**) in instances where a computer needs to use USB rather than a parallel port for communications. Requires ECU manager version 2.3 or Dash manager 3.2 or above.

Includes a 6 ft. cable USB A plug to B plug.

MoTeC USB To CAN Adapter

P/N: **M UTC**

$288.00

Wiring and Related

1. MoTeC Relay Kits

Bosch Relays with Sealed housings and mounting tabs

Includes Terminals and Seals

P/N: **M 12-7867K**

$25.06

2. MoTeC Relay Fuse Holder Kit

Fuse Holder, Seals and terminals

P/N: **M 12-7868K**

$4.85

Multi Relay Fuse Bar Holder

Anodized Aluminum for Multiple Relays/ Fuses

2 Position Holder

P/N: **M REL H2**

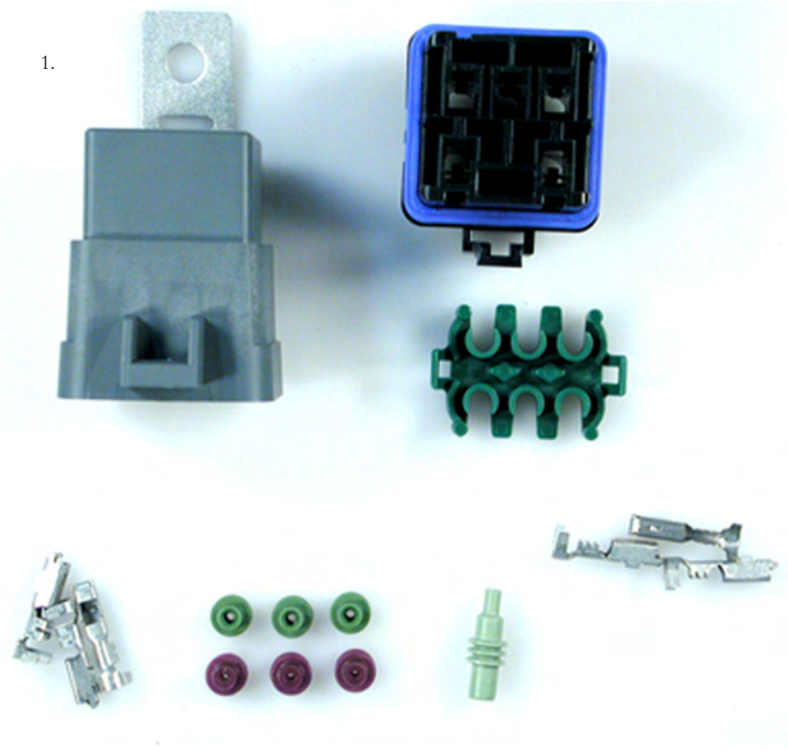
$11.56

3 Position Holder

P/N: **M REL H3**

$17.85

1.



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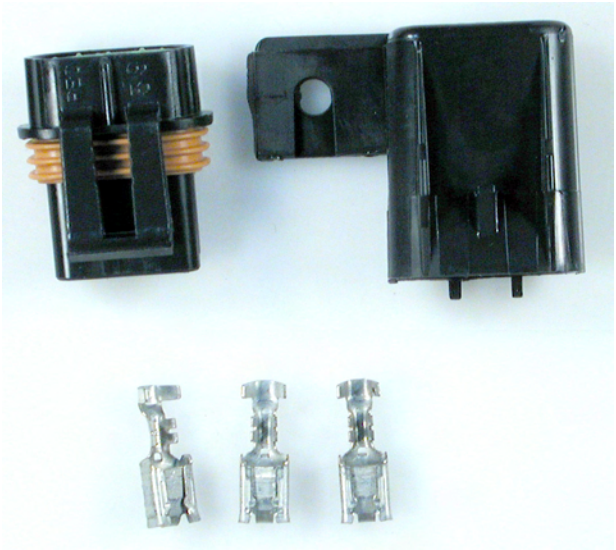


Diagnosis and Testing

MoTeC Break-Out Harnesses

The absolute best way to interogate your harness non-intrusively!

A Must for electrical Troubleshooting

Breakouts available for all popular connectors

P/N: **M880 BOH**

$600.00

P/N: **M ADL BOH**

$806.00

P/N: **M800 BOH**

$383.00

P/N: **M ECONO 36 BOH**

$373.80

P/N: **M ECONO 18 BOH**

$209.00

MoTeC Comms Tester and Power Up Harnesses

Allows ECU to be powered and communicated with

Excellent for upgrading ECU only or diagnosing comm's problems with the harness

Comms Tester for M4/M4e/M48 ECU's

P/N: **M 36 WAY COMM H**

$157.50

Tester for M400/600/800

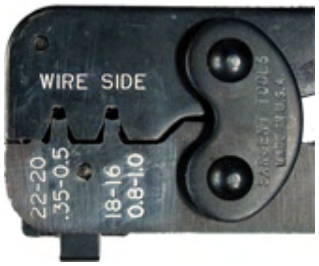
P/N: **M800 COMM**

$164.25

Connectors:

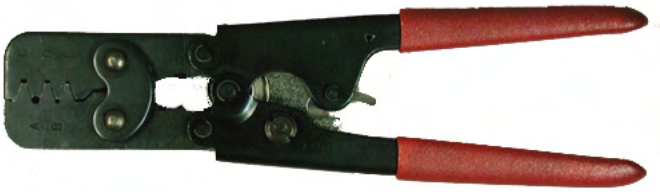
Crimping Tools

1. Metripack - No Seal Crimper
P/N: **M 12-9500**
$164.56

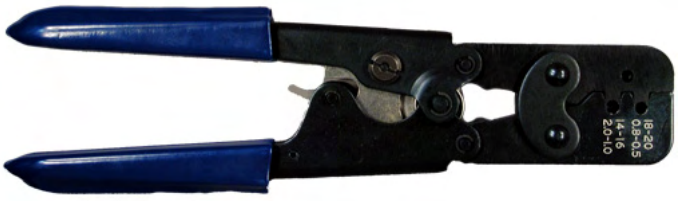


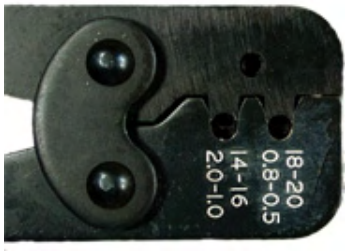
2. 10 - 12 Ga Faston Crimper
P/N: **GM 6285847**
$Call

3. Small Universal Crimper
P/N: **M 3126 CT**
$75.00



Crimping Tools

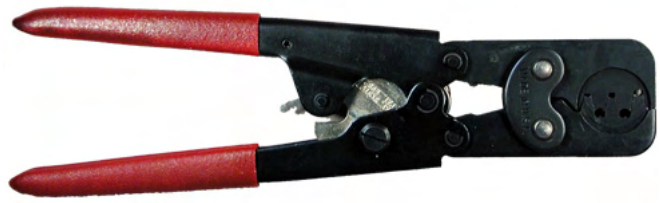




1. Weather Pack with Seal Crimper

P/N: **M 12-4254**

$179.77



2. Universal Open Barrell Crimper

P/N: **M 12-5271**

$109.20

3. Universal Crimper

P/N: **M 12-5270**

$121.10

Connectors:

Crimping Tools

1

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Connectors:

Crimping Tools

1. W-crimper

P/N: **M CW-935**

$249.00

2. Buttsplice crimp tool

P/N: **BC-1265**

$135.00

3. Large MilSpec crimper

Required for Large DTM and Milspec Firewall Connectors

P/N: **M22520/1-01**

$483.00

4. Large MilSpec crimper

Crimp Head for above crimper

P/N: **M22520/1-02**

$140.92

5. Small MilSpec crimper

(requires turret)

P/N: **M22520/2-01**

$396.32

Turrets for MilSpec crimper J:

6. Autosport 22GA sockets (ADL)

P/N: **M22520/2-07**

$63.20

7. Autosport 22GA pins

P/N: **M22520/2-09**

$61.66

8. Autosport 20GA sockets (CDI-8)

P/N: **M22520/2-10**

$61.66

(not shown) Autosport micro sockets

P/N: **M 225034**

$118.02

(not shown) Autosport micro pins

P/N: **M 225035**

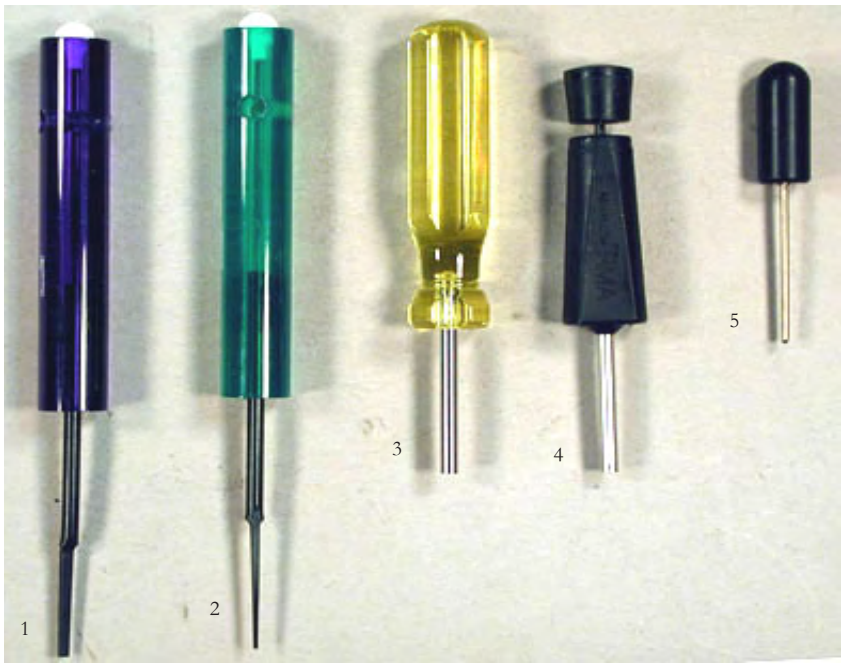
$118.02

(not shown) Turret for DTM and Mil-Spec

P/N: **M22520/2-02**

$68.02

Extractor Tools



1. Blue Extractor Tool - Wide

P/N: **M 12-4430**

$10.50

2. Green Extractor Tool - Narrow

P/N: **M 12-4429**

$10.98

3. Yellow Weather Pack Extractor -Round

P/N: **EXWP**

$8.41

4. Black Metripack Extractor -Round

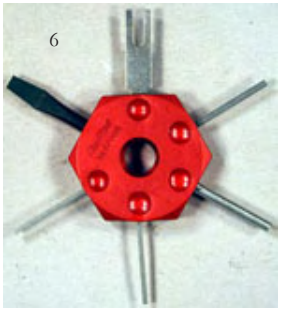
P/N: **VW 9700**

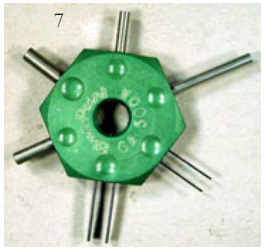
$16.43

5. Black LK Type Extractor

P/N: **M 12-1876**

$3.89





6. Red Multi Terminal Extractor -Hexagonal

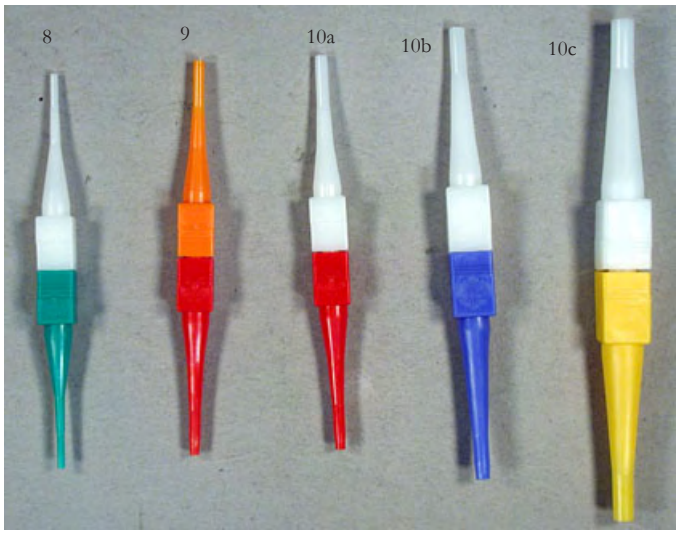
P/N: **M YA500GA "A"**

$36.23

7. Green Multi Terminal Extractor - Hexagonal

P/N: **M GA-500A "B"**

$35.48



8. ADL Autosport Micro Extractor -Green/ White

P/N: **MS M81969/14-01**

$1.00

9. CDI-8 Autosports Extractor -Red/Orange

P/N: **MS M81969/14-10**

$1.68

10. MilSpec Extractors

a. P/N: **MS M81969/14-11 Red/White**

b. P/N: **MS M81969/14-03 Blue/ White**

c. P/N: **MS M81969/14-04 Yellow/ White**

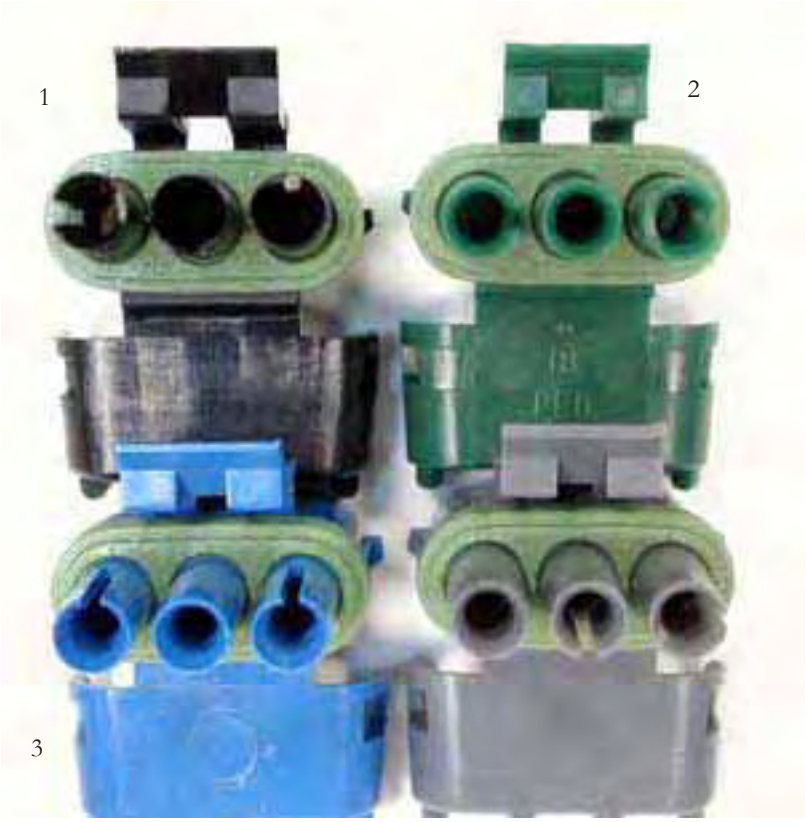
$1.50 each

MAP Sensor Connector Kits

1. GM Style 200/300 KPA MAP
Connector color Black
P/N: **M 120-5796K**
$4.95

2. GM Style 100 KPA MAP
Connector Color Green
P/N: **M 120-0403K**
$4.95

3. GM Style 108 KPA Baro
Connector color Blue
P/N: **M 120-5800K**
$4.95



MAP Sensor Connector Colors

The standard colors which are used with GM type MAP sensor connectors tells you which type of sensor it is. For example:

Green connector 1 BAR MAP

Blue connector 108 KPA BARO

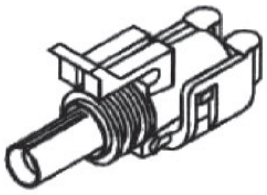
Black connector 2-3 BAR MAP

2 and 3 BAR MAP Sensors both have the same keying on the connector and can be easily interchanged as long as the calibration in the ECU is changed to match the sensor being used.

Connectors:

Weather-Pack

Prices do not include terminals and wire seals



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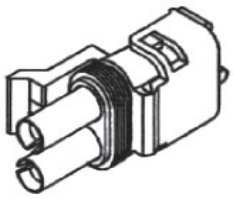
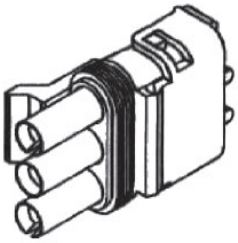


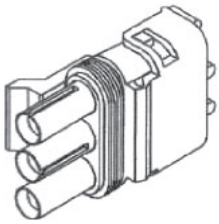
2

1. 1-pin male housing
P/N: **M 120-5791**
$1.65



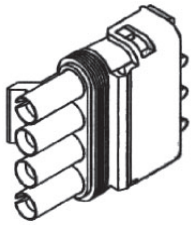
3

2. 2-pin male housing
P/N: **M 120-5792**
$1.70



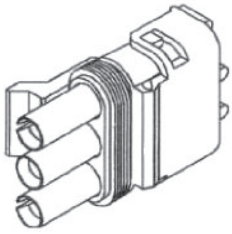
4

4. 3-pin TPS male housing Kit
P/N: **M 120-5793**
$1.83



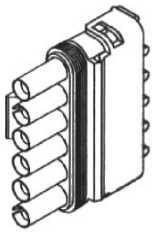
5

5. 4-pin male housing
P/N: **M 120-5797**
$1.91



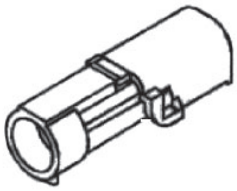
6

6. 6-pin male housing
P/N: **M 120-5799**
$2.40



7

7. 1-pin female housing
P/N: **M 120-0996**
$1.65



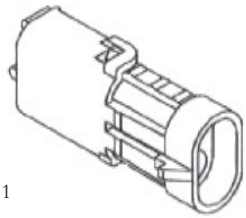
8

A word about Weatherpack

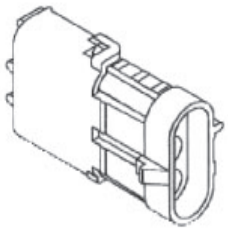
The Delphi Weatherpack series of connectors can be used with wire sizes ranging from 12 Ga to 20 Ga. There are corresponding seal sizes and terminal sizes to match the wire size. Before placing your order make sure which sizes you will require so that we can incorporate the proper sized terminals and seals into your order for you.

Weather-Pack, cont.

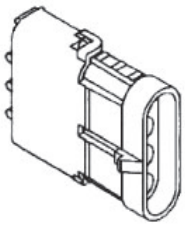
1. 2-pin female housing
P/N: **M 120-0973**
$1.70


1

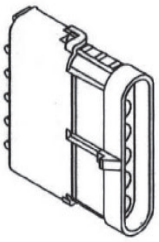
2. 3-pin female housing
P/N: **M 120-0717**
$1.83


2

3. 4-pin female housing
P/N: **M 120-0974**
$1.91


3

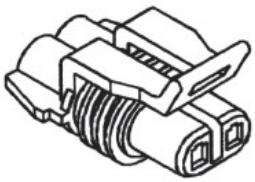
4. 6-pin female housing
P/N: **M 120-0975**
$2.40


4

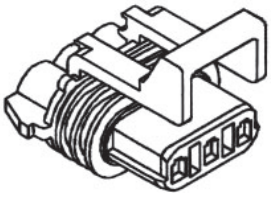
Metripack

Wires and Terminals extra unless listed as Kit

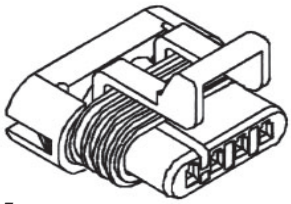
5. Sealed 2-pin male Boost Valve Kit
Use Lock M 12-2634
P/N: **M 12-2641K**
$4.86


5

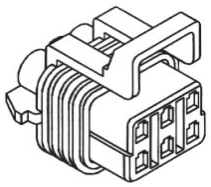
6. Sealed 3-pin male housing
Use Lock M 12-2845
P/N: **M 12-0293**
$2.56


6

7. Sealed 4-pin male housing
Use Lock M 12-7948
P/N: **M 12-2144**
$3.26

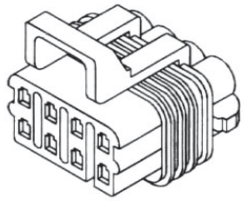

7

8. Sealed 6-pin male housing
Use lock M 12-2850
P/N: **M 12-2848**
$3.90


8

Connectors:

Metripack, cont.



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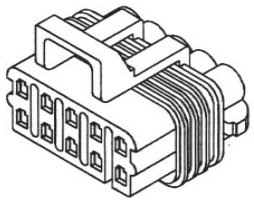
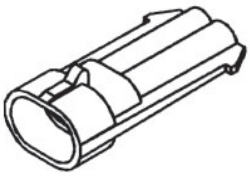


2

1. Sealed 8-pin male housing
Use Lock M 12-7936
P/N: **M 12-7937**
$3.98



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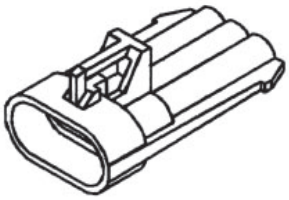
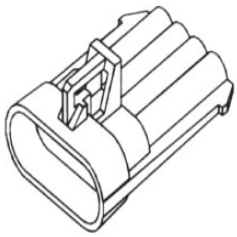


4

2. Sealed 10-pin male housing
Use Lock M 12-4264
P/N: **M 12-5425**
$4.05

3. Sealed 2-pin female housing
Use Lock M 12-2634
P/N: **M 12-2000**
$2.25



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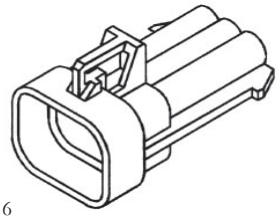
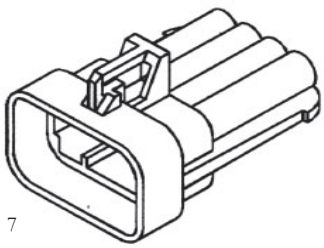


6

4. Sealed 4-pin female housing
Use Lock M 12-9615
P/N: **M 12-9615**
$3.10

5. Sealed 4-pin female housing
Use Lock M 12-7948
P/N: **M 12-2102**
$3.72



7

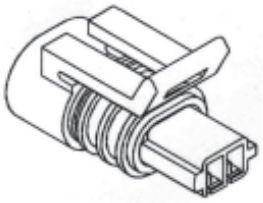
6. Sealed 6-pin female housing
Use Lock M 12-2850
P/N: **M 12-4107**
$4.10

7. Sealed 8-pin female housing
Use Lock M 12-6304
P/N: **M 12-7931**
$4.73

Connectors:

Metripack, cont.

1. Delphi air-temp housing Kit
P/N: **M 122-2197K**
$5.05
2. Delphi engine-temp housing Kit
P/N: **M 122-2193K**
$5.05
3. 3-pin Delphi,
crank-sensor housing
P/N: **M 122-2183**
$2.75
4. 3-pin sensor, gray housing
P/N: **M 122-2280**
$3.20
5. 3-pin round housing
P/N: **M 122-5287**
$3.75
6. 4-pin sensor, gray housing
P/N: **M 122-2834**
$3.22
7. 4-pin sensor housing
P/N: **M 122-2188**
$3.32
8. 5-pin sensor housing
P/N: **M 122-2825**
$4.56
9. 6-pin sensor housing
P/N: **M 122-2260**
$4.25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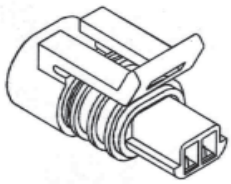
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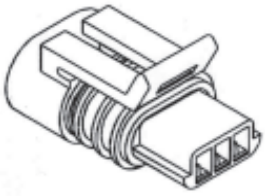
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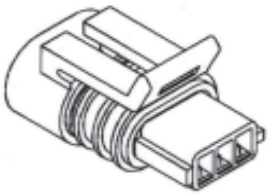
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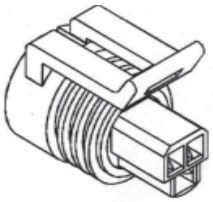
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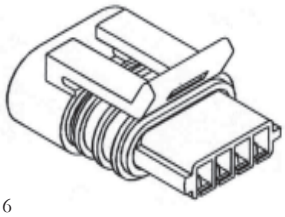
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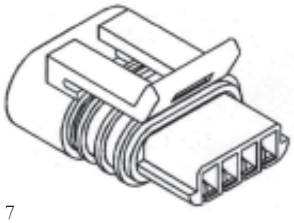
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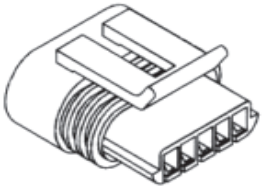
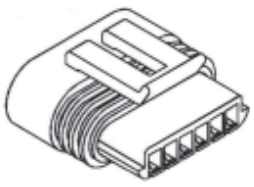

8

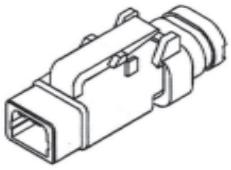
Pull to Seat Style

The Delphi pull to seat style connectors such as those used for Engine Temp and Air Temp and IAC require that you cut the wires longer than needed. You then insert the wires through the connector and terminate with the wire sticking through the front of the connector. Then - as the name implies - you pull the wires back into the connector until the terminal seats itself.

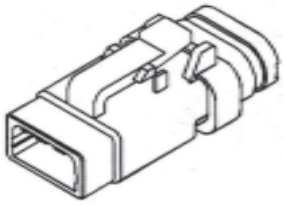

9

Connectors:

DTM Kits



1



2

DTM connectors feature MilSpec pins in plastic housings.

1. 2-pin male housing Kit

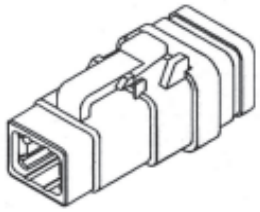
P/N: **M DTM-2SK**

$5.38

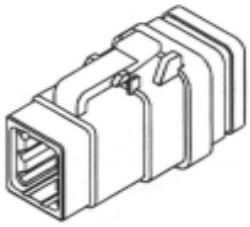
2. 3-pin male housing Kit

P/N: **M DTM-3SK**

$8.18



3



4

3. 4-pin male housing Kit

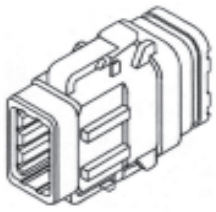
P/N: **M DTM-4SK**

$9.08

4. 6-pin male housing Kit

P/N: **M DTM-6SK**

$10.76



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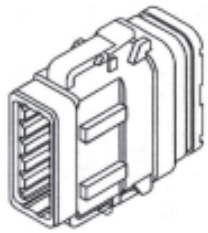


6

5. 8-pin male housing Kit

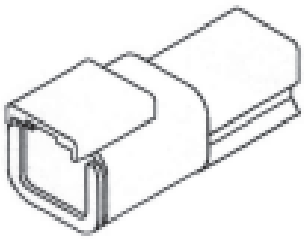
P/N: **M DTM-8SK**

$12.31

6. 12-pin male housing Kit

P/N: **M DTM-12SK**

$16.44



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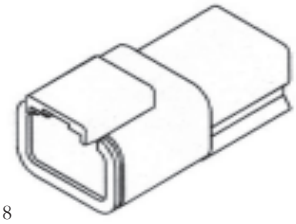

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7. 2-pin female housing Kit

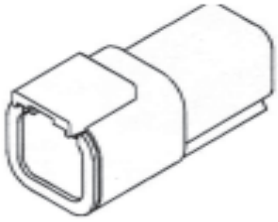
P/N: **M DTM-2PK**

$4.24

8. 3-pin female housing Kit

P/N: **M DTM-3PK**

$5.80



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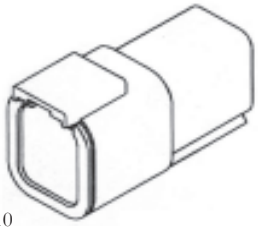

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9. 4-pin female housing Kit

P/N: **M DTM-4PK**

$9.33

10. 6-pin female housing Kit

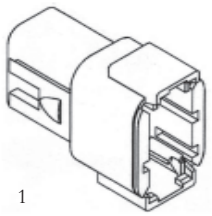
P/N: **M DTM-6PK**

$10.48

DTM Kits, cont.

1. 8-pin female housing
P/N: **M DTM-8PK**
$10.78

2. 12-pin female housing
P/N: **M DTM-12PK**
$12.75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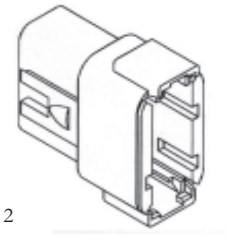
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DTM's - Light Durable and Inexpensive?

The Deutsch mini connectors feature high quality gold plated terminals like those used in milspec and autosport type connectors. The DTM's are sealed connectors that are very lightweight and inexpensive. For durability, weight and quality - they're hard to beat!

Miscellaneous

3. 2-pin female Kit
P/N: **M LK-2 KIT**
$6.15

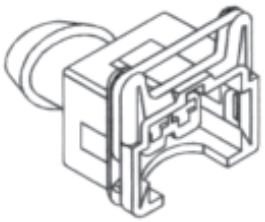
4. 2-pin male housing
P/N: **LK-2M**
$2.64

5. 3-pin female Kit
Includes Housing, Boot and Terminals
P/N: **M LK-3 KIT**
$16.50

6. 3-pin male housing
P/N: **LK-3 MALE HSNG**
$12.00

7. 3-pin distributor housing
P/N: **LK-3X**
$15.15

8. 7-pin female Kit
Includes Housing, Boot and Terminals
P/N: **M LK-7 KIT**
$18.15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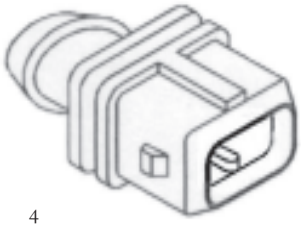
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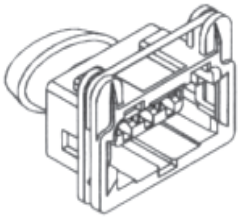
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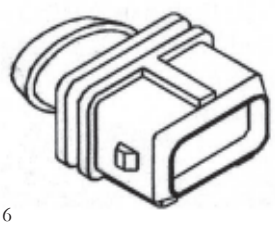
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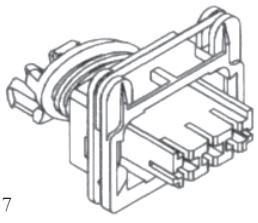
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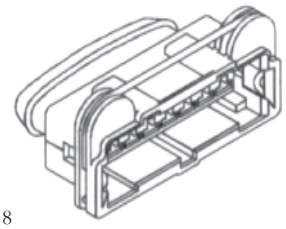
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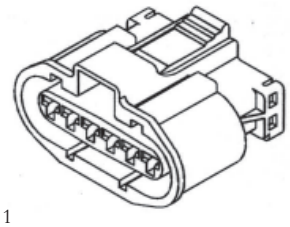
Connectors:

Miscellaneous, cont.



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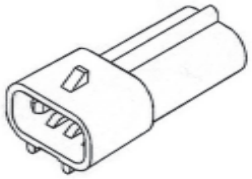

2

1. 6-pin Mitsubishi housing

P/N: **PB265-06027**

$4.12

2. Male fuse housing

P/N: **M 12-3769**

$3.36

More good stuff

Not Shown....

We have an incredible selection of imported and domestic terminals,

housing, and ECU headers and plugs—please enquire.

Apparrel

1. MoTeC Flex-Fit Hat

Black with Red MoTeC Logo on front - website on back

P/N: **MOTEC HAT BLACK**

$20.00

2. MoTeC T-Shirt

Black "Australian for Horsepower"

M,L,XL,XXL sizes

P/N: **MOTEC T-SHIRT**

$15.00

Phone, Fax, Flesh

MoTeC Support

MoTeC personnel are ready to travel to your location anywhere in the world to offer technical assistance—or we'll help you by phone, fax, and email. Ask us about our annual training seminars.

On-site support

$Call for current pricing. Fees are charged per day (minimum of one day) payable to technition upon arrival at the site

$Call for current pricing. Fees are charged per day / travel (minimum of 2 days) payable in advance.

Call for a quote on transportation, meals, and lodging.

Phone support

$Call for current pricing. Fees are charged per hour (billed in 60-minute increments)

Track-support packages

(per yearly subscription)

Call for Pricing

Online Help Files

MoTeC USA has begun placing HTML based help on our website for our customers. Visit www.motec.com and click the link to support to gain access to our helpfiles

MoTeC Glossary

Description of terms specific to EFI Industry

Sequential Fuel Injection

Sequential means that each injector for each cylinder is triggered only one time during the engine's cycle. Typically the injector is triggered only during the intake stroke. True sequential injection requires the ECU to know not only where top dead center is, but also which half of the cycle the engine is on. TDC on a 4 stroke occurs 2 times during the cycle, once on compression and once on exhaust. MoTeC references all timing events that occur within the ECU, to Top Dead Center Compression. This generally requires an input on the engine's camshaft to provide the ECU with a SYNC signal. Once the ECU is synched, injection timing can be optimized to provide the most efficient mixing of fuel and air into the cylinder. Control of injection timing can lead to increases in midrange torque while decreasing emissions and fuel consumption.

Semi-Sequential Fuel Injection

Semi-Sequential means that 2 or more cylinder's injectors are triggered at the same time, but only 1 time during the engine's cycle. This requires the ECU to be synched with the engine's cycle. Typically injection timing is retarded from the optimum timing point for full sequential by an angle which is equal to 1/2 the angle between 2 cylinders in crankshaft degrees. On a V8 Chevrolet, the injectors for cylinders 1 and 8 would be triggered at the same time. They would be triggered 45 degrees late for cylinder number 1 and 45 degrees early for cylinder number 8. Degrees between 1 and 8 = 90 ; 1/2 of 90 = 45. Semi-sequential allows optimization of injection timing which typically leads to increases in midrange torque and a reduction in fuel consumption for equivalent power compared which Batch fire.

Injection Timing

With a synced engine which uses 1 injector in each intake manifold runner, it is possible to phase the firing of the injector so that it only sprays during the intake stroke. This allows you to introduce fuel into the intake stream precisely at the time when the airflow into the cylinder is the greatest providing the best possible atomization and the highest efficiency. MoTeC offers a user definable 2 or 3 dimensional Injection Timing adjustment table so that you can accurately match any engine's injection timing demands. Tuners can select either beginning or end of injection on which to base the timing table. This allows the tuner the ultimate in adjustability to suit any engine combination. With the M4 and M48 ECU's Injection timing is adjustable in 5 degree increments while the M400/600/800 Series offer .1 degree resolution making them suitable for Gasoline or Diesel Direct Injection.

Batch Fire

Batch fire means that 2 or more injectors are triggered at the same time once every crankshaft revolution. If the ECU is synched with the engine's cycle, the injection timing can only be half optimized as fuel is injected both on the intake stroke and on the power stroke. Companion cylinders are paired in batch fire mode similar to wasted spark ignition modes. The advantage of batch firing is that the ECU needs only to know where TDC is. This means that a sync on the cam is not required. The disadvantage to batch firing is that the Injector Dead Time is doubled for the engine's cycle. This leads to a decrease in fuel flow and typically requires a larger, less efficient injector to be used to make up for the loss of flow. On High Horsepower applications this means the idle quality will suffer tremendously.

Injector Dead Time

Injector dead time refers to the latency of the injector in producing maximum flow rate. All injectors require a certain amount of time to open completely and produce maximum flow. The amount of time is dependant on several variables including; fuel pressure, battery voltage and physical characteristics of the injectors themselves. Typically higher fuel pressure or lower battery voltage tends to increase the dead time. This leads to a reduction in fuel flow in to the engine and as a result influences the engine's state of tune. Luckily MoTeC allows the user to define an injector Dead Time table if the values are known, or use a standard compensation which is known for a number of injectors. The ECU automatically adjusts the values as the battery voltage changes to ensure that the fuel curve remains constant. If a fuel pressure input is used on the system, MoTeC can compensate for variations in fuel pressure to achieve a consistent fueling even with varying fuel pressures.

Bank to Bank

Multipoint - Bank to Bank - Multipoint is the least efficient electronic method of injecting fuel into an engine. Each injector is physically located in a position which allows its fuel output to be delivered to a single cylinder, but the fuel is injected once per rev and injection timing is of no real value even if the ECU is synched to the engine's cycle because an entire bank of cylinder's injectors are fired at the same time. The advantage of Bank to Bank is that the ECU typically does not need to be synched at all. This makes it a simple retrofit to engines which never used crank or cam triggers, because it can run the engine with simply 1 pulse per cylinder firing. Ignition timing can still be adjusted, but it is required that the engine use a mechanical distributor to distribute spark from 1 coil. No individual cylinder trimming is possible.

Individual Cylinder Trim

When an ECU is synched to the engine's cycle, it becomes possible to individually adjust a cylinder's ignition advance and also if the engine is full sequential, the amount of fuel which is supplied to that cylinder. MoTeC allows individual overall trims of each cylinder's ignition and fuel quantity in all models. In the M4 and the M400/600/800, Individual cylinder trim tables are provided which allow the tuner to vary the timing and the fueling based on RPM and Load. Typically fully variable ignition advance requires the use of multiple coils to avoid rotor-tip to cap-terminal alignment problems which may lead to spark scatter. Additionally if a single inductive type coil is used, it is possible if high fluctuations in advance occur between cylinders, that the coil does not have sufficient time to charge which leads to reduced coil output energy and possible misfire.

Bank to Bank

Singlepoint - Singlepoint involves placing the injectors in a single common injection point in the inlet path. This is typically done on roots or screw supercharged engines and some normally aspirated engines. This provides the least efficient method of using Electronic Fuel Injection. About the only method which provides less control is Carburetion. From a power standpoint, single point is not tremendously worse. Fuel consumption is typically significantly increased over any of the above methods. There is virtually no control possible as far as each cylinder is concerned and the inherent problems of delivering 2 substances with differing mass through the same passages an into the combustion chamber are present. The advantage of Singlepoint is that it does not require the ecu to be synched in any way. MoTeC makes an attempt to smooth out the fuel delivery of singlepoint by triggering the injector drives in a staggered manner. This provides a smoother more consistent delivery of fuel and reduces the instantaneous drain on the battery/charging system which can lead to ignition misfire in other systems.

Narrow Band Lambda

Narrow Band Lambda provides an output voltage between .1v and 1.0v dc based on the oxygen differential between the exhaust pipe and the atmosphere. This can give an indication of the air fuel ratio at which the engine is running however the sensor range is limited to ratios of about 14.0:1 (1.0v) and 15.4:1(.1v). At ratios beyond this range, the sensor output does not increase or decrease making it virtually useless for tuning an engine for anything other than steady state cruising. The advantage of Narrow Band Lambda comes into play while trying to keep emissions in check. The sensor provides a signal to the ECU which basically indicates either rich (output voltage above .5v air fuel less than 14.7) or lean (output voltage below .5v air fuel greater than 14.7) but really does not describe to what degree the mixture is either rich or lean. This is fits perfectly in with the need for "perturbation" of today's 3 way catalysts which need excess air to catalyze Hydrocarbon and Carbon Monoxide, and excess fuel with which to reduce Oxides of Nitrogen. Because of this requirement by the catalyst, Narrow Band Lambda Control is constantly varying the air/fuel ratio both slightly above and below 14.7:1 in such a manner that the average air fuel ratio is maintained at 14.7:1. Most engines in use today, produce peak power with air fuel ratios in the 12:1 - 13.5:1 range well below the measuring capability of a narrow band lambda sensor. It is for this reason that Narrow Band Lambda is of no help for high loads and or RPM's.

Wide Band Lambda

Wide Band Lambda provides the ECU with a specific definition of the air fuel ratio at which the engine is currently running. Wide Band Sensors are able to depict air fuel ratio's as rich as 10.5:1 and as lean as 18:1 and report the exact lambda to the ECU. This is done a number of ways. MoTeC M4 and M48 ECU's use Bosch 4 wire Wide Band Lambda sensors to measure wide band lambda. MoTeC M400/600/800/880 ECU's use either the Bosch LSU or the NTK UEGO 5 Wire Wide Band Lambda Sensor. MoTeC then uses this information to determine the actual lambda and displays this on the console and or uses it for Lambda Control if the ECU is set up to do so.

4 Wire Wide Band Lambda Sensor

This technology takes advantage of the fact that a 4 Wire Wide Band Lambda sensor's voltage output is based on not only the oxygen differential between the exhaust pipe and atmosphere, but also is dependant on the temperature of the sensor itself. Sensor impedance varies with temperature, so a MoTeC ECU measures not only Wide Band Lambda Voltage, but also the sensor impedance. It is not possible to properly display lambdas without monitoring the sensor temperature. Systems which do not use at least a 4 wire sensor typically have errors in displayed lambda as high as 8%!

5 Wire Wide Band Lambda Sensor

This newer technology is used to determine the air fuel ratio of an engine by measuring lambda sensor output and measuring the current required to hold the sensor voltage output constant. An oxygen sensor produces voltage and a small amount of current as oxygen atoms pass across its substrate from high concentration to low concentration. The greater the flow of oxygen, the greater the voltage produced. This is the case when a rich mixture is encountered. Conversely, when current is applied to an oxygen sensor, oxygen atoms are moved from a low concentration to a high concentration or vice versa depending on the polarity of the current applied. The MoTeC M400/600/800/880 ECU's are capable of measuring this type of sensor input which offers increased speed and accuracy over the older technology 4 wire sensors. M4 and M48 ECU's can leverage the 5 wire technology by connecting a MoTeC PLM, which has a definable analog voltage output, to the Lambda input on the ECU.

Bosch LSU and NTK UEGO Sensors

Both the MoTeC M400/600/800/880 and the MoTeC PLM are capable of operating with either the NTK UEGO or the Bosch LSU-4 5 wire wide band sensors. Of the two, the NTK is most accurate. It is a true laboratory grade sensor. Its accuracy has been found to be about 1.5% better than that of the Bosch LSU. Additionally the NTK has a better response time than does the LSU again about 1.5%. The NTK is the benchmark against which the LSU is measured. The advantage of the LSU sensor is its lower price compared to the NTK. If you are doing very precise and accurate laboratory type testing, the NTK is the sensor for you. Both sensors have a life expectancy of 500 hours on unleaded fuels and that number is diminished to 50 hours using leaded fuels. Lambda Sensors are very similar to spark plugs with respect to their estimated life expectancy. Spark Plugs are designed to last 40,000 miles under optimum circumstances but they can be damaged in less than 1 mile by misuse. A lambda sensor can be thought of the same way. Misuse by overly rich mixtures, high temperatures, overtightening or dropping can have a very negative effect on lambda sensor life. Like spark plugs, lambda sensors cannot be returned under warranty.

What is Lambda?

Lambda describes an equivalence value in percentage of the chemically correct air-to-fuel ratio for any type of fuel. If the air fuel ratio measured in the exhaust pipe of an engine is at the chemically correct (stoichiometric) ratio of air-to-fuel, lambda is equal to 1.0. In the case of gasoline, lambda 1.0 is equivalent to 14.7:1 air-to-fuel. Lambdas less than 1.0 indicate the engine is running richer than stoichiometric, while lambdas greater than 1.0 indicate a lean mixture. If we measure a lambda value of 1.06 and we want a lambda value of .95, we simply increase the fuel delivered to the engine (pulsewidth) by 11 percent. This will place us exactly at .95 lambda. By using the Lambda Was or the Quick Lambda functions a tuner can quickly shape the fuel table to match the engine's exact requirements. In addition, the W Lambda function copies the Quick Lambda value to the sites immediately to the right and up above to help keep the fuel table variance from one site to another at a minimum.

Quick Lambda and Lambda Was

A MoTeC ECU, allows the user to define a lambda goal table based on load and rpm. The Quick Lambda function in the software allows a tuner to quickly adjust the values in the fuel control table to achieve the goal lambda, based on the lambda reported by the sensor. If the reported lambda is .98 and the goal is .93, the ECU automatically jumps to the current load site, and multiplies the value in the site by 1.05. The next time the engine runs in that site, the lambda will be .93. Similarly, Lambda Was allows a user to locate a load and rpm site in the main fuel table and enter a recorded lambda measurement from a data log. The ECU multiplies the load site value by the difference between entered lambda and the goal lambda value so that the engine will achieve the goal lambda the next time it runs on that load site. This makes tuning much faster and easier than calculating the required enrichment based on an air fuel ratio number. Of course you can manually do multiplication, division, addition and or subtraction on any site or a number of sites with only a few keystrokes, and the overall trim function allows you to trim the entire fuel or ignition table up or down based on percentage.

Lambda Control

There are two types of control methods used in closed loop fueling. Narrow band closed loop control attempts to keep the air fuel ratio "pertubating" (dithering) slightly richer and slightly leaner than stoichiometric for emissions control. In a MoTeC ECU, narrow band control is simply turned on or off based on load and rpm. Wide Band closed loop control measures the current lambda and adjusts the fuel delivered to the engine, by comparing the measured lambda to the preset lambda goal table.

Configurability

MoTeC ECU's are well known for their ability to be customized to meet the demands of nearly any application. Software configurable hardware within the ECU allows a tuner to match the requirements of any inductive or capacitive discharge type ignition available. Triggering can be done using hall effect, magnetic pickup, logic level switch or optical sensor. There are specific modes which are selectable to allow MoTeC to read LS-1, LT-1 Opti-Spark, Ford TFI, Subaru, Honda, Mazda, BMW, Nissan, Toyota, as well as aftermarket flying magnet or hall type crank triggers. If you make a change to a new type of trigger wheel, MoTeC allows you to simply redefine the signals in software. No need to send your ECU in for hardware upgrade. Every MoTeC ECU can be configured quickly so it is possible to borrow an ECU, send your calibration file to the new ECU and be up and running in merely seconds.

Data Logging

MoTeC M4 and M48 ECU's feature 512Kbyte non-volatile logging memory space. M800's feature a full Megabyte of logging space and the M880 is available with up to 4 Megabytes of logging memory. Tuners can select which items they want to log, and what rate they wish to sample. M4 and M48 can sample up to 20 times per second (.050 Seconds) while M800/880 max out at 200 times per second (.005 Seconds) Maximum logging time is dependant on the number of items being logged and the rate at which you are logging.M4 and M48 maximum logging time is 382 minutes at 1 sample per second. If the logging memory becomes full, MoTeC automatically begins logging over the top of the existing log ensuring that you will always have the most recent data available in your log when it is retrieved.

RPM Limiting

RPM Limiting can be done a number of ways using MoTeC. Software allows you to select whether your cut will be based on fuel only, ignition only, fuel with ignition 100 rpm above, ignition with fuel 100 rpm above or both fuel and ignition at the same time. An adjustable control range allows the tuner to set the harshness of the cut and an adjustable randomizer gives the tuner the opportunity to get a fully random cut no matter what number of cylinders the engine has. The overall RPM Limit sets the maximum engine rpm you want the engine to ever see. Other cuts allow starting line rev limits which typically are lower than the maximum rpm limit. Using a 9 position trim switch, MoTeC can provide you with 9 separate, driver selectable RPM Limits for ultimate adjustability to conditions without the need for a laptop to change the setting.

Oddfire tables

Tables in the ECU describe the oddfire angle in crank degrees for use on oddfire engines such as the Viper V-10, Harley Davidson V-Twin and the Chevy V-6. Simply tell the ECU the number of degrees past TDC Number 1 that each cylinder arrives at its own TDC. A special requirement for triggering is needed to run the oddfire engines. The crank input must have at least 1 tooth per TDC and they must be evenly spaced. This usually requires a 12 tooth wheel in the case of the V-6 Chevy. MoTeC CDI-8 Capacitive discharge Ignition can be used to supply the spark to oddfire engines of 8 cylinders or less controlled directly by a MoTeC ECU. For engines with greater than 8 cylinders, 2 CDI-8's can be used.

Comprehensive Online Help

All MoTeC software comes with Comprehensive online help available by pressing the F1 key on your keyboard. Whether it is Engine Management, Data Acquisition or our Data analysis software you can always access the help files through the use of the F1 key.

CDI-8 Ignition

Capacitive Discharge Ignition has been used in racing and in some automobiles for a number of years. MoTeC offers one of the industry's most advanced capacitive discharge ignition systems available. The CDI-8 is an 8 channel CD Ignition which can either run in stand alone mode (meaning it does not require an ECU to run it) or in slave mode. In slave mode, the CDI-8 receives an encoded signal from a MoTeC ECU which tells it which coil output to fire. In this mode, a CDI-8 can deliver a full energy spark at up to 1.1KHz which is enough to keep up with an 8 cylinder engine turning 16,000 rpm!

MoTeC Software

Always free from www.motec.com New software upgrades will allow additional features for your ECU. Since each ECU is produced with all of the same hardware, there will never be an issue of a feature not working with an older ECU. New features will always work with every ECU.

Security

MoTeC offers its customers the option of securing their tuning file through two methods. The first is a simple password protection which can be set on the ECU so that others are not able to make changes to the tuning file nor can they send a new file to the ECU unless they have the password. The password can be reset as often as you like, and you may choose to turn the password off at anytime but you must know the password in order to perform these functions. Additionally, MoTeC allows the tuner to encrypt a file which is stored within the ECU. In this case, the file can only be sent to an ECU which has a matching password for the encrytped file. If file encryption is used, a tuner could send an encrypted file to a customer with a matching password, and the customer would be able to send the file to the ECU without knowing the password. The customer would still not be able to view or in anyway modify the file. Data downloads can always be retrieved whether or not a password is set on an ECU.

High/Low Injection Capability

On many types of racing engines, tuners may find improved efficiency by changing the physical location of the injector in relation to the intake valve. MoTeC allows the user to run 2 sets of injectors in the inlet path and switch from one to the other with a 3 dimensional table based on load and rpm. Typically this feature is used when an engine is making substantial amounts of horsepower but requires only small amounts of fuel at low speeds. In this case, the tuner can select 2 injectors of differing flow rates, one for low speed operation, the other for high speed/power operation. MoTeC allows you to define the flow differential between the 2 injectors, so that the proper amount of fuel can be delivered out of each injector. Another way to use the MoTeC High/Low capability, is to use 2 injectors of equal flow rate, but located at different points in the inlet path. In this manner, fuel injection location can be varied at certain points in the rpm band to provide the highest efficiency. Of course MoTeC allows you to enrich or enlean the engine at the transition from 1 set of injectors to the other to provide seamless operation.

Crank Index Position

The CRank index Position is perhaps the most important timing value in the ECU. The CRiP tells the ECU where the engine is in relation to TDC Cylinder #1. The CRiP is defined as the distance in crankshaft degrees, between the reference tooth when it is aligned with the crankshaft position sensor, and Top Dead Center Compression Number 1. For example, if the reference tooth is aligned with the crankshaft sensor when the crankshaft is 55 degrees before TDC Compression Number 1, then the CRiP is 55. An easy way to determine the CRiP before startup is to rotate the crankshaft in the direction of rotation until the reference tooth is aligned with the crankshaft position sensor. Then measure the number of degrees, required to turn the crankshaft in the direction of rotation until the number 1 cylinder is at Top Dead Center of the Compression stroke. Once you determine this value, you may start the engine and enter the CRiP set screen under the Ignition menu. Use a non dial-back timing light to check the CRiP. The timing advance displayed in the CRiP set screen should match the measured value using the timing light. If they do not match, move the CRiP value until the timing does match.

Reference Tooth

The definition of the Reference Tooth depends on the type of Ref/Sync mode being used. If using missing or extra tooth type modes, the reference tooth is defined as the tooth which occurs directly following the missing or extra tooth or teeth. If using 1 tooth per TDC or Multiple tooth mode with a sync input, the reference tooth is defined as the tooth which occurs directly following the sync input.

Rotary Ignition Split

Factory Rotary engines use 2 spark plugs per rotor. Both spark plugs in a common rotor are not fired at the same time. There is a delay between the time when the leading spark plug is fired, and when the trailing spark plug is fired. MoTeC wrote special software to be able to mimic this type of ignition control for rotaries in the M4 and M800/880. A table is available to define differing amounts of timing split to suit any application and driving condition. Of course if you do not wish to use the split timing function MoTeC can accomodate that as well.

Auxiliary Tables

MoTeC Engine Management systems are extremely adaptable to differing engine requirements. One way MoTeC makes this possible is through the use of Tuner definable output controls. A 3 dimensional table can be selected by the tuner with several inputs available to use as the table axes. Typically Engine RPM, Engine Temperature, Air Temperature, Manifold Pressure, Throttle Position and Auxiliary Inputs are available to set up the table. Tuners typically use this type of control for engines which have switchable cam profiles such as the Honda V-Tec. The 3D table can be set so to Throttle Position versus RPM for example and the tuner can turn on the V-Tec based not only on RPM but also load so the cam timing can be optimized for varying loads.

Fully Variable Camshaft Timing

MoTeC is proud to be the industry leader in the aftermarket for controlling engines with fully variable camshafts. We have several special modes written to allow full control of up to 4 fully variable camshafts per engine such as the Dual Vanos BMW V8 using our M800/880 series of Engine Management Systems. Special Ref/Sync modes were written to allow the tuner to use the stock trigger wheels and sensors. Camshaft timing can be independently adjusted for each cam in 1/2 degree increments based on RPM and Load. With full adjustment of camshaft opening and closing points, the engine's volumetric efficiency curve can be stretched providing optimum cylinder filling over a much wider range of RPM, increasing the average horsepower and ultimately making the car faster.

Drive by Wire control

MoTeC is the first in the industry to adopt drive by wire throttle control using OE components. Many of the newer models of cars are equipped with electronic throttle control. MoTeC retains all of the standard redundant sensors that the factory uses for safety. In addition to very precise control of the throttle position, throttle by wire also incorporates idle speed control and traction control. MoTeC Drive By Wire is available for certain Bosch, Delphi and Nissan systems using our M800/880 series of Engine Management Systems and we are working on additional Drive By Wire systems on a daily basis. If you are interested, please call to discuss your system's requirements.

Telemetry

All MoTeC products offer the ability to transmit data from the ECU using a 3rd party radio, to a PC using another radio, for real time monitoring of engine functions. The Telemetry option allows the ECU to transmit this data over the radio's and MoTeC's Telemetry Monitor software allows the tuner to view the data remotely. Note that Telemetry is for real time analysis only. No data storage is done on the PC, however the ECU will still be able to log the data.

Remote Logging

When used in conjunction with the MoTeC Telemetry option, remote logging allows the data which is monitored with Telemetry Monitor, to be stored on the PC and converted to a data format which is readable using MoTeC Interpreter, our data analysis software. Note that the Telemetry option must be enabled in order for Remote Logging to function.

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